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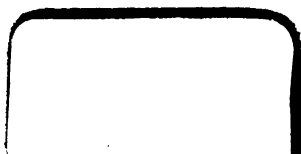
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MINES AND MINERAL STATISTICS.

92

ANNUAL REPORT

OF THE

DEPARTMENT OF MINES,

NEW SOUTH WALES,

=

FOR THE YEAR

1879.



By Authority:

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1880.

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ANNUAL REPORT.

TO THE HONORABLE EZEKIEL A. BAKER, M.P., MINISTER FOR MINES, &c., &c.

Sir,

I have the honor to submit the following Report upon the working of that portion of the Mining Department charged with the administration of the Mining Act, and upon the state and progress of the mining interest during the year 1879.

As regards the number of applications to lease lands for gold and mineral mining made and dealt with during the year, I am happy to be able to report an increase, and venture to submit that such increase indicates not only greater enterprise in mining pursuits but also satisfactory progress in the work performed by the officers of the department, notwithstanding that those in the head office have had important additional duties in connection with other branches of this department cast upon them.

During 1879 755 applications for gold and mineral leases were received, as against 683 such applications received in 1878.

Of the 755 applications above mentioned 579 were for gold leases and 176 were for mineral leases.

During 1879 the number of applications disposed of was 606, as against 585 dealt with in 1878.

Of the 606 applications disposed of 442 were for gold-mining leases, representing in the aggregate about 1,999 acres, and 164 were for mineral leases, representing about 6,829 acres.

There was also an increase in the number of applications made under sections 27 and 28 of the Mining Act received and dealt with.

During 1879 145 such applications were received and 135 were dealt with, as compared with 82 such applications received and 133 dealt with in 1878.

There is reason to believe that a much larger area of land is now held, especially on the tin fields, under mineral licenses than during any former year ; but as there is no official record of the area so held I am not in a position to furnish any figures in regard thereto. If, however, I am correct in my surmise, the aggregate quantity of mineral land taken up during the year will probably exceed very considerably the quantity applied for under lease.

The quantity of purchased land occupied for mining purposes is very large, but there are no records from which the area can be ascertained even approximately.

A very large extent of land is occupied for mining purposes under miners' rights and mineral licenses, but the quantity so held is continually varying, and holdings of this kind are as a rule not registered; consequently no reliable estimate can be made of the quantity of land so held.

The following table shows approximately the quantity of land (other than purchased land and land held in virtue of miners' rights and mineral licenses) occupied for mining purposes, and the minerals being or to be mined for therein :—

AREA of land held under lease, and application to lease Crown Lands, and authority to mine upon reserved land.

Mineral.	Mining Act 1874.	Gold Fields Act 1866.	Crown Lands Occupation Act 1861.	Totals.
	a. r. p.	a. r. p.	a. r. p.	a. r. p.
Gold	4,495 0 29½	350 3 8	.....	4,845 3 37½
Antimony	102 0 0	.....	.....	102 0 0
Asbestos	40 0 0	.....	.....	40 0 0
Asbestos and Copper	20 0 0	.....	.....	20 0 0
Coal	40,987 2 22	.....	8,931 2 0	49,919 0 22
Copper	2,131 0 8	.....	540 0 0	2,671 0 8
Iron	40 0 0	.....	20 0 0	60 0 0
Limestone and Alum	20 0 0	.....	.....	20 0 0
Minerals not stated	330 0 0	.....	377 1 33	707 1 33
Marble	40 0 0	.....	.....	40 0 0
Shale	85 1 30	.....	.....	85 1 30
Silver	250 0 0	.....	.....	250 0 0
Silver and Copper .....	.....	.....	40 0 0	40 0 0
Slate	139 0 0	.....	.....	139 0 0
Sulphur	40 0 0	.....	.....	40 0 0
Tin	7,683 0 32	.....	2,400 0 0	10,083 0 32
	56,403 2 1½	350 3 8	12,308 3 33	69,063 1 2½

From the above table it will be seen that the area of land held under the Mining Act is increasing, while the holdings under the Gold Fields Act of 1866, and the Crown Lands Occupation Act of 1861 are gradually decreasing. This may be accounted for by the expiring or cancellation of old leases, and to the conversion of leases granted under the lastnamed Act into conditional purchases.

The work performed by the Geological Staff, under the direction of Mr. C. S. Wilkinson, F.G.S., has been highly satisfactory, both as regards the collection of geological and mineral specimens and the arrangement and supervision of the mineral exhibits of this Colony at the International Exhibition, and also as to that performed in the field.

The geological and mineral collection belonging to the Mining Department now comprises upwards of 14,720 specimens, irrespective of the collection of the late Rev. W. B. Clarke, M.A., F.R.S.

The mineral and geological specimens at the Garden Palace are not only highly creditable to this department, as evidencing the industry of its officers in collecting, and the ability of Mr. Wilkinson and his staff in arranging them, but they prove most conclusively that the mineral resources of the Colony are exceptionally extensive and varied. The effect produced by the collection upon our foreign visitors, especially those connected with or interested in mines, or the working of metals, has been in the highest degree satisfactory. Their interest in the mineral exhibits of this Colony has been evinced by the applications made on behalf of foreign countries, or by foreign companies, for samples of our ores, &c., &c., for their home collections.

For the highly creditable exhibits of coal, consisting of full-size sections of the principal seams, and also of large blocks of coal, thanks are due to the colliery proprietors who supplied, and to the Examiner of Coal Fields, Mr. Mackenzie, F.G.S., who collected and arranged them.

The collection, comprising 320 samples of the woods of this Colony, made with the valuable aid of the Director of the Botanical Gardens, and exhibited by this department, has well repaid the labour and expense connected with it. And though the samples might perhaps have been rendered more attractive by additional labour in preparing them, they could scarcely, considering the time occupied in collection and preparation, have been exhibited so as to display more effectively the wealth of our forests in valuable, useful, and ornamental timbers.

The awards made by the judges testify alike to the value of the above-mentioned collections and to the ability displayed in their arrangement.

While on this subject, it affords me very great pleasure to be able to bear testimony to ready and valuable aid rendered both early and late by Mr. G. E. Herring, the Chief Clerk, and Mr. W. S. Campbell, the Chief Draftsman of this department, and by many of the gentlemen of their respective branches, in arranging the exhibits in time for the opening ceremony, but for this aid the mineral and other exhibits could (notwithstanding the exertions of the Geological Surveyor and his staff) scarcely have been placed in position in time.

As regards the work in the field performed by the Geological Surveyor and his staff during the year, I may mention that the geological survey, embracing 19½ square miles, at Hill End, made by Mr. E. F. Pittman, under the direction of Mr. Wilkinson, has been completed, and the maps thereof; and of the topographical and underground survey made by Mr. T. S. Parrott, are published herewith. In addition thereto, inspections and reports have been made upon the quarries for road metal at Prospect and Pennant Hills; also of the silver mines at Boorook and Moruya, and the copper mine at Milburn Creek. The following gold-fields have also being inspected and reported upon, namely:—Sebastopol and Juneec, Araluen and Braidwood, Bingera, Walcha, Bendemeer, Uralla, Tenterfield, Timbarra, Cangai, Burrangong, and Baker. A careful examination has been made of the country around Major's Creek and the Upper Shoalhaven, with a view to obtain a water supply from the latter place,

but unfortunately the conclusion arrived at was that a supply of water could not be obtained from that source at the required level. Moss Vale, Jordan's Crossing, and Mittagong were also visited and reported upon.

Considerable progress has been made by Mr. Wilkinson in the preparation for publication of the Sketch Geological Map of the Colony compiled by the late Rev. W. B. Clarke, M.A., F.R.S., &c., &c., and it is hoped that it will ere long be ready for publication.

During the year 1879 the following map work was executed :—About twenty maps were prepared for the Sydney International Exhibition. Locality maps of the parishes of Clare, Scone, and Wellington Vale were compiled and photo-lithographs published; also a sketch locality map of the Gloucester Gold-field and a plan of the Fish River Caves were drawn and were published by photo-lithography. The whole of the parishes in the counties of Gough and Hardinge, and part of the county of Clive (which include the greater part of the principal tin-mining districts), are being compiled in separate parish locality maps, and are being photo-lithographed for publication. A map of the Adelong Gold-field is also under compilation, the first sheet of which was compiled during 1879, and photo-lithographed and published in January of the present year. The work involved in the compilation of these maps is very considerable, but they are extremely useful, especially when land which had been occupied and abandoned is being taken up afresh, as is the case at present on most of our tin-fields. Great credit is due to the Chief Draftsman and the officers of his branch for the progress made in this important work.

The efforts made during the past year to collect and disseminate full and correct information respecting new discoveries, as well as to furnish reliable information concerning mineral lands available for occupation for mining purposes, have been persistent, both in the head office and in the offices throughout the country.

As a means of aiding and encouraging prospectors, a large number of samples of ores, rocks, &c., have been examined and reported upon by the Government Geologist, and eighty-one assays and analyses have been made of newly-discovered ores, &c., &c., and the results made known to the discoverers.

The work performed by the officers of the department, both in the head office and in the country offices, has been highly satisfactory, and affords ample evidence of their zeal and ability.

My acknowledgments are due to Mr. T. C. Binny, the Registrar of the Department, for his valuable assistance in connection with the tables, &c., annexed to this Report.

The reports hereto annexed are on the whole gratifying, for, though during the early part of the year mining operations in many places were suspended or retarded by want of water, and later on in some few places work was stopped, and much damage to mines was caused by floods, still on most of the gold-fields, as well as on the tin-fields, there was a marked improvement towards the end of the year.

The result of the year's operations has been that minerals to the value of £2,085,456 11s. 8d. have been won, showing, as compared with 1878, a decrease equal to £80,556 18s. 3d., and as compared with the decennial average, a decrease equal to £110,674.

Return showing the quantity and value of Gold, Shale, Copper, Tin, Silver, Iron, Antimony, and Lead produced in the Colony of New South Wales during the last ten years.

Year.	Gold.		Coal.		Shale.		Copper.		Tin.		Silver.		Iron.		Antimony.		Lead.		Mixed Minerals.		Total.
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	
	Oms.	£	Tons.	£	Tons.	£	Tons.	£	Tons.	£	Oms.	£	Tons.	£	T. c.	£	T. c.	£	T. n.	£	£
1870	240,868	981,016	895,544	316,836	8,590	27,570	1,000	65,721	....	....	13,968	2,801	..	....	..	....	..	..	..	..	1,344,954
1871	323,610	1,250,485	898,784	316,340	14,700	34,060	1,444	86,876	....	....	71,312	13,681	..	....	21 0	500	..	..	..	..	1,708,092
1872	425,130	1,645,532	1,012,426	394,192	11,040	28,700	1,452	105,888	896	47,703	49,545	12,063	..	....	0 13	5	..	..	..	..	2,234,789
1873	361,785	1,396,176	1,192,892	695,747	17,850	50,475	2,846	239,102	4,571	234,426	66,968	16,278	..	....	27 15	210	..	..	..	..	2,701,423
1874	270,823	1,040,329	1,304,567	700,224	12,100	27,300	4,160	325,140	6,219	454,322	73,027	18,880	..	*15,434	12 15	122	..	..	..	..	2,701,751
1875	230,863	877,694	1,329,729	819,430	6,197	15,500	3,677	301,690	8,090	551,311	52,553	12,794	40	502,142	0	5,000	..	..	..	..	2,698,921
1876	167,412	613,190	1,519,918	808,300	15,996	47,994	3,275	249,978	6,958	439,688	69,179	15,456	2,680	13,309	40 0	140,467	0	1,892	..	..	2,194,457
1877	124,111	471,418	1,444,271	853,996	13,903	46,524	4,513	324,226	8,054	505,540	31,409	6,673	2,600	7,800	69 12	1,131	20 12	325 231	7,725	2,233,160	
1878	119,665	430,038	1,575,467	990,966	24,371	57,211	5,219	345,156	7,210	396,322	60,568	13,201	900	6,066	64 0	1,904	5 0	258 77	1,032	2,172,421	
1879	106,650	407,219	1,583,381	950,879	32,519	66,980	4,142	257,332	5,921	373,349	33,164	13,071	1,118	10,550	76 16	1,046	13 13	536 25	525	2,085,456	
	2,275,927	9,000,141	12,523,966	6,838,868	162,318	492,254	31,728	2,302,141	47,006	3,144,121	576,619	136,638	7,368	54,151	464 8	39,178	111 5	2,510 833	9,332	21,951,504	

* These figures represent the value of iron raised prior to the year 1875; quantity not known.

† These figures represent the quantity raised during 1876 and previous years.

GOLD.

FROM the Reports of the Wardens and Mining Registrars it appears that at Trunkey there is a good opening for miners who understand the working of quartz-reefs. Such men, the Warden says, can earn £2 10s. and upwards per week, and there is work for at least 200. Alluvial mining is retarded by want of water; there is ground in several localities that would pay well with water. Two men are said to have 180 ounces of gold as the result of four weeks' work on the banks of the Abercrombie River. At Tuena quartz-mining is at a stand for want of machinery, while at Junction Point and Victoria Flat where there is machinery this branch of mining is improving. At Orange prospects are said to be improving. In the Carcoar Division there are said to be immense deposits of auriferous quartz on both sides of the Belubula River, the stone though poor is soft and easily crushed, and will pay good wages, worked on a large scale with water-power. At Rockley there are said to be considerable areas that would pay for sluicing if a supply of water were brought on to the field. During a period of five weeks, while water was available, one miner, with the aid of two Chinese, obtained, by sluicing, 53 ounces of gold.

In the Mudgee District the Warden reports an increased yield of gold and improved prospects, due to the introduction of additional appliances and to co-operation becoming better understood, and to the ground being in consequence more effectively worked.

In the Lachlan District the Warden reports that prospecting new country has been prevented to a great extent by want of water, but both alluvial and vein deposits have been discovered by the few parties who have been searching. He thinks the country between the Lachlan and Darling, and the Murrumbidgee and Bogan, will be found to be rich in gold, copper, and tin, and will be the site of vast mining operations as soon as water and capital can be brought to bear upon it. He states that the prospects of alluvial mining are more encouraging than at any time during the past three years.

In the Southern District the Warden reports a better supply of water than for many years past, which proved beneficial to the operations generally of the miners; but the miners at Araluen were flooded, and the works so much damaged that the yield of gold from that quarter has been seriously affected. Work has been stopped at the Major's Creek reefs, owing to the inability of the miners there to treat the mundic and pyritous stone satisfactorily. The stone has been tested on a large scale in Victoria, and found to contain sufficient gold to pay for working, but the cost of sending it to Victoria eats up all the profit, and it cannot be effectively treated by any process known in this Colony. Works on the same principle as some in Victoria are to be erected, and it is hoped they will deal effectively with the stone and enable these reefs to be worked profitably. From Little River the Mining Registrar furnishes a list of nuggets found in 1879, varying from 19 dwts. to 32 ozs. 15 dwts., also a list of those found in that division from 1856 to 1878; these nuggets are said to have been spread over an area of 80 square miles. Satisfactory yields have been obtained from the reefs at Yalwal Creek, and it is thought these reefs deserve more attention than has hitherto been given to them. Skill and appliances are both required. The results obtained at the Dromedary are encouraging. In the Tumut and Adelong District, at Tumbarumba, there is said to have been less rain in

1879 than in 1878, and consequently sluicing operations have been suspended, except during short periods. There is promise of improved machinery at Ournie, which will treat both quartz and pyrites effectively. The prospecting works at Paddy's River, aided out of the Prospecting Vote, are said to be progressing satisfactorily. At Albury several claims have been taken up, and some stone raised, but none crushed during the year. In the Gundagai Division a good deal of prospecting has been carried on, chiefly at Nimo Ranges and Jones's Creek. The discovery of gold in connection with asbestos is being followed up, but some difficulty is experienced in extracting it.

In the Peel and Uralla District prospects are said to be brighter at Nundle, and also at Bingera, where it is said there was an increased yield of gold. In the Glen Innes Division good prospects were obtained from the newly discovered reefs, but there was no machinery to crush the stone.

In the New England and Clarence District the reefs at Lunatic were improving, but there was only one small battery, and crushing was delayed for want of water. A ton of stone from the Perseverance Reef, sent to Sydney to be crushed, yielded 50 ozs., and the Lunatic Reef, 1 foot wide, is said to average 4 ozs. per ton. The tunnel for the hydraulic sluicing at Poverty Point has yet to be cut through about five chains of hard rock. Auriferous ground was discovered between Timbarra and Fairfield.

In the Hunter and Macleay District a battery was erected at Coolongolook, but the results obtained from it were not satisfactory; it is supposed the plant is defective. From several small parcels of stone sent to the Mint from different mines, the yield varies from 3 ozs. to 14 ozs. per ton. The reefs so far as tested are small, but few have been tested below 30 feet, and none below 70 feet. At Cobark some of the reefs are said to be as much as 7 feet wide, and they average from 2 to 3 feet, and the yield of gold is estimated at from 1 oz. to 2 ozs. per ton. There is said to be a large extent of similar ground still unprospected, in consequence of its being so mountainous and covered by a dense scrub which renders the procuring of provisions very difficult. At Rawdon Vale very little of the country has been prospected, but it is proposed to erect machinery there, and then no doubt the reefs will be tested. At Burneal Creek the miners are waiting for machinery to be erected at Cobark. At Little River, 20 miles from Dungog, the reefs are promising, but there is no machinery, though water is available for motive-power. At Copeland there are three batteries, one of ten stamps, near the Centennial Reef; one of 10 stamps, on the Right-hand Branch; and one of 10 stamps, at the Rainbow; there is also a battery at the Bowman, but it is idle, being out of repair.

Though the reward offered by the Government for the discovery of payable quartz veins below a given depth has not had the effect of inducing miners to engage in deep mining, in many districts it has however acted as a spur to one or two enterprising Companies, at Adelong and Hill End, who are persevering in their praiseworthy efforts to test the value of our veins in depth.

In addition to the prospecting works towards which aid was granted out of the sum of £5,000 voted in 1878, and some of which are still progressing, two parties of prospectors have been subsidised with a view to opening up entirely new country. One party have proceeded to

the Danbury and Dale Ranges, in the Albert District, some 50 miles west of Wilcannia; the other to an unexplored tract of country on the Cotter River, in the county of Cowley. The latter party report having discovered traces of gold on the banks of the Cotter River, but they have not yet found it in payable quantities; they have, however, commenced operations so recently that they have not yet had time to do more than commence their explorations. The party sent to the Albert District have barely reached the scene of operations. Some of the works aided out of the Vote upon the recommendation of the Prospecting Board, have been completed without gold in payable quantities having been found; indeed up to the present time in only two instances have the works so aided resulted successfully, and in these two cases it is not yet known what effect the discoveries will have in opening up new fields for mining operations.

The mineral which has more than any other contributed to the rapid progress in wealth and population of the Australian Colonies is gold.

But for the discovery of this metal it is scarcely conceivable what period of time must have elapsed before the population would have reached its present numbers.

At the end of 1850, when the territories now known as Victoria and Queensland were included in the Colony of New South Wales, the population numbered 265,503; the imports for that year were valued at £2,078,338, and the exports at £2,399,580; while in 1857 the population had increased to 768,622, the imports to £28,985,617, and the exports to £19,091,464.

Thus during the first seven years from the discovery of gold the population had increased 189 per cent., the imports 1,054 per cent., and the exports 695 per cent., whereas during the preceding seven years the population had increased only 60 per cent., the imports only 34 per cent., and the exports only 104 per cent.

That this discovery should have contributed so largely to the progress of these Colonies is not surprising, when it is remembered that within the former limits of New South Wales more than 60,000,000 ounces of gold, valued at upwards of £240,000,000 sterling (equal according to the figures supplied by Mr. Del Mar, M.E., in his History of the Precious Metals, to more than one-third of the gold supply of the whole world during the twenty-eight years 1851 to 1878) has been raised already.

Taking the figures supplied by Mr. Del Mar in his Table of Gold Productions from 1800 to 1876, it appears that the production prior to 1847 did not in any year exceed £6,000,000, whereas in 1848, the year of the discovery of the rich placers in California Proper, the production reached £13,500,000; and in 1851, the year in which gold was discovered in Australia, the production amounted to £24,000,000; and in the following year (1852) the production equalled 38,750,000 sterling.

According to Mr. Del Mar's estimate the total gold and silver in the world up to 1878 amounts to £2,661,200,000.

The gold alone represents about £1,284,000,000, consequently the production of gold within the original boundaries of New South Wales equals about one-fifth of all the gold in the world.

Professor Egleston, in a recent lecture on gold, at the School of Mines of Columbia College, is reported (*Vide* Town and Country Journal) to have said that all the gold in the world would make a pile only 25 feet wide, 45 feet long, and 25 feet high, the contents of which would be 28,125 cubic feet.

The pyramid at our International Exhibition representing the gold production of the Australian Colonies contains 4,180½ cubic feet. Therefore, according to Professor Egleston's estimate, these Colonies have produced rather more than one-seventh of all the gold in the world.

The following table is from the History of the Precious Metals, by Alexander Del Mar, M.E. :—

COMPARATIVE yield of the Great Gold Fields of the Modern World.

Country.	Period.	Total Product of Gold from beginning to end of period.
		£
Japan	1580 to 1639—60 years.	40,000,000
Brazil	1710 to 1789—80 years.	180,000,000
Russia	1840 to 1878—39 years.	160,000,000
California Proper	1848 to 1878—31 years.	220,000,000
Australia	1851 to 1878—28 years.	240,000,000

Seeing that the writer's intention is to include in the yield for Australia that of New Zealand and Tasmania, his estimate is considerably below the mark, but he has in fact given a total which represents the aggregate production of New South Wales, Victoria, and Queensland, and thus it will be seen that the production of gold from the territories formerly comprised in the Colony of New South Wales exceeds that of any of the great gold-fields of the modern world.

The gold-fields, which in the past have proved so valuable in attracting population, might, notwithstanding the fact that gold-mining has lost the charm which in the early days surrounded it, still prove most valuable as affording an outlet for any surplus labour that may be attracted to our shores, if new arrivals could be induced to try their fortunes on them. For it can scarcely be denied that our gold-fields should, and under proper conditions would, afford employment to an almost unlimited number of labourers, but as a rule the uncertainty of the remuneration for labour performed by the miner on his own account operates as a deterrent, and many prefer remaining idle, in the hope of obtaining employment in the metropolis on wages, to the risk of engaging in work which may bring no reward. But it should be borne in mind that though this uncertainty does unquestionably exist it operates both ways, as evidenced by the fact that, while numbers of industrious gold-miners are quite as poor, in spite of their industry, as those who live in towns or elsewhere in idleness, waiting or looking for work, they have always before them the hope and chance of a rich find, and the bulk of them are as well off as ordinary labourers in moderately regular work, while there are numerous instances of gold-miners who, by industry or luck, or both combined, have acquired a competence, or even wealth, and attained a position they could not under ordinary circumstances have hoped to reach in almost any other vocation. Then again, the independence

enjoyed by the gold-miner, who is his own master, has a charm which compensates for much of the privation and disappointment inseparable from the gold-digger's lot, and sweetens labour often ill-requited. Moreover, the gold-miner can as a rule live at a comparatively small cost; his wants are few compared with those of operatives in large towns, and many of the wants can be supplied by his own industry. For example, a gold-miner, in virtue of his miner's right, which costs only 10s. per year, is entitled (in addition to mining for gold) to occupy and enclose a small area of land for the purpose of residence. Upon this he can build his house, the materials for which he can in most places have for the mere trouble of getting, and if he wish to remove to some other locality he has the right to sell and transfer his interest in the house and land so enclosed, or he can remove his house if he so desire.

Upon the small plot of ground enclosed he can grow sufficient vegetables, &c., for his own use, and usually can obtain free of cost wood and water, as well as free grass for a limited number of cattle. Many of our gold-miners indeed combine farming on a small scale with mining, and gradually abandon the latter for the former calling.

Doubtless many persons are deterred from engaging in gold-mining from a sense of inexperience, believing that experience is essential to success, whereas it frequently happens that a man without any previous knowledge of the work succeeds where experienced miners have failed. On many of our gold-fields any able-bodied man used to out-door work can obtain a subsistence by re-working old ground. For this work the most ordinary appliances suffice, and a few weeks' experience enables him to acquire the local knowledge to guide him to the most suitable patches of ground, and the knowledge how to work to advantage. In the early days all our gold-miners were entirely void of experience, yet they not only discovered, but opened up, and to a great extent worked our gold-fields, many of them acquiring fortunes. As evidence of the extent of this field of labour we have in this Colony at least 22,000,000 of acres of auriferous land, and we have about 8,000 gold-miners; a large proportion of these engage in other pursuits during a great part of the year, and it is doubtful whether 5,000 are constantly engaged in mining for gold, a number totally inadequate to the proper development of this important branch of our mineral wealth. The late Rev. W. B. Clarke, in his pamphlet on the progress of gold discovery in Australasia, says:—"On the whole there is now reason to anticipate that a golden harvest in Australasia will be gathered in for many years (or centuries) to come." The decline of our gold yield during late years has been regarded by some as evidence of exhaustion of our auriferous deposits, but when we consider how small is the area opened, compared with the area unexplored, and how far are even the oldest of our gold-fields from being worked out, we may safely conclude that the falling off in the yield of gold is due to causes other than exhaustion. The principal causes, probably, are—

- (a.) The small number of persons now engaged in gold-mining.
- (b.) The want of means or enterprise to carry on extensive explorations.
- (c.) The gradual exhaustion of such of the deposits within the older gold-fields as are within the reach of the miner unaided by capital.
- (d.) The want of capital, appliances, and skill, to work systematically and economically those deposits which cannot be profitably worked without their aid.

When gold was first discovered (or rather when the discovery was first made known) the excitement was naturally very great, and the desire to grow suddenly rich inspired a large number of persons who possessed no qualifications for prosecuting the search for the precious metal but a spirit of enterprise, and consequently the discovery of our gold-fields was as a rule made hap-hazard ; and there is no reason to doubt that others equally rich, or richer, yet remain to be discovered in the vast tracts of country still unexplored, and that numerous deposits passed over by our earlier explorers will yet be found, even in the most extensively worked of our oldest gold-fields. Recent discoveries amply support this view.

One peculiarity of gold-mining is that the greater the number of persons engaged in the pursuit the greater is each man's chance of success, and the smaller the number the less attraction has gold-mining for persons who have no employment or are following other callings. To fully understand this peculiarity, it must be remembered that gold has a fixed value and a ready market at all times, without reference to the quantity raised, consequently there is no such thing as competition and underselling. Again, each man's labour may result in a new discovery, in which numbers of others are free to participate. For example, A discovers a deposit of gold in a certain place, perhaps where gold had not previously been worked, but the deposit is not rich ; however others are attracted to the spot by the discovery. They set in to work, and the result may be the opening up of a deposit or deposits so much richer than that first discovered that the original discoverer abandons his claim in order to participate in the richer discoveries of those who were first attracted by his find—thus proving the advantage of numbers ; for had A been left to enjoy alone the fruits of his discovery, it is highly probable no further deposits would have been opened, and the locality might after a time have been abandoned as worthless, until by chance some other miner should be tempted to make a further test of the place.

The want of means to carry on prospecting operations for the discovery of new gold-fields, and the gradual exhaustion of those easily worked deposits of our known gold-fields, have been the main causes of the decrease in the number of our gold-miners, and until new fields be opened, or the necessary capital and skill for working the deeper or more difficult deposits of our older gold-fields be forthcoming, an increase of our gold yield can scarcely be expected.

The working of these deposits is merely a question of time, because sooner or later the fact must become patent that under proper management these deposits present an opening for the legitimate investment of capital, and offer as great security and as certain a return as the soundest mining ventures of any other kind. The secret of the failure of some of the most important of our gold-mining enterprises is that when gold was reached so much as was readily obtainable was rushed out of the mine, and the proceeds were divided, leaving no reserve for further explorations. Had part of the gold obtained been devoted to exploring the mine, and had these works been carried forward simultaneously with the work of extracting the auriferous earth in view, the strong probability, almost certainty, is that a constant supply of auriferous material would have been kept up for years, and moderate dividends would have been paid over a long period, instead of very large dividends for a limited period, and then the abandonment of the mine before it had been thoroughly tested.

I regret to say that instead of an increased yield of gold in 1879, as anticipated, the returns, kindly furnished by the Deputy Master of the Mint and the Collector of Customs respectively, show a decrease upon the yield of 1878 equal to 10,015'84 ozs.

QUANTITIES of Gold, the produce of New South Wales, received into the Royal Mint, Sydney, during 1878 and 1879, compared.

District.	Division.	1878.	1879.	Increase.	Decrease.
		ozs.	ozs.	ozs.	ozs.
Bathurst	Bathurst	2,790'77	1,958'64	.....	832'13
	Carcoar	4,666'35	4,568'88	.....	97'47
	Orange	3,510'76	3,613'70	102'94	.....
Tambaroora and Turon	Hill End	11,583'89	9,923'56	.....	1,660'33
	Tambaroora .....	.....	310'28	310'28	.....
	Sofala	4,680'81	4,231'97	.....	448'84
	Stony Creek	2,021'87	899'44	.....	1,122'43
Mudgee	Mudgee	5,822'28	6,350'96	528'68	.....
	Gulgong	6,076'82	7,431'60	1,354'78	.....
	Hargraves	1,493'25	1,522'93	29'68	.....
	Wellington	3,008'02	2,574'33	.....	433'69
Lachlan	Parke	5,077'47	2'849'18	.....	2,228'29
	Forbes	211'47	1,235'58	1,024'11	.....
	Grenfell .....	.....	919'46	919'46	.....
	Young .....	.....	1,453'57	1,453'57	.....
Southern	Goulburn .....	.....	295'53	295'53	.....
	Braidwood	7,864'32	4,826'73	.....	3,037'59
	Araluen	4,364'48	3,238'78	.....	1,125'70
Tumut and Adelong	Adelong	10,146'64	10,827'11	680'47	.....
	Tumut	1,062'07	1,329'06	266'99	.....
	Yass	15'47	.....	.....	15'47
	Tumbarumba .....	.....	478'13	478'13	.....
	Wagga Wagga	1,067'88	132'17	.....	935'71
	Gundagai	170'72	48'22	.....	122'50
	Cooma	344'50	362'21	17'71	.....
	Kiandra .....	.....	405'48	405'48	.....
Peel and Uralla	Armidale	767'81	604'08	.....	163'73
	Rocky River	835'32	270'93	.....	564'39
	Nundle .....	.....	1,418'71	1,418'71	.....
	Tamworth	3,688'00	1,011'45	.....	2,676'55
	Scone .....	.....	.....	.....	.....
Hunter and Macleay	Copeland .....	.....	8,853'49	8,853'49	.....
Localities unknown .....	.....	26,077'00	22,953'72	.....	3,123'28
	Total	107,347'97	106,899'88	18,140'01	18,588'10

SUMMARY.

District.	1878.	1879.
Bathurst	10,967'88	10,141'22
Tambaroora and Turon	18,286'57	15,365'25
Mudgee	16,400'37	17,879'82
Lachlan	5,288'94	6,457'79
Southern	12,228'80	8,361'04
Tumut and Adelong	12,807'28	135,82'38
Peel and Uralla	5,291'13	33,05'17
Hunter and Macleay .....	.....	88,53'49
Unknown	26,077'00	22,953'72
	107,347'91	106,899'88

EXPORTS—GOLD.—1879.

Dust.		Bars.		Auriferous Quartz.		Total.	
Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
ozs. 740½	£ 2826	ozs. 848½	£ 3461	pkgs. 27 1,543 cwt. pyrites.	£ 4,579	ozs. 2,749'75	£ 10,866

These returns, in the absence of complete and reliable information direct from the mines, supply the most accurate information available, and therefore we must continue to rely upon them; but in view of the fact that while the quantity sent to the Mint in 1879 is less than that sent in 1878 by only 448 ozs., the quantity passed through the Customs in 1878 exceeds that of 1879 by 9,567 ozs., one is naturally led to inquire whether the abolition of the export duty on gold can have influenced the records of the Custom House—that is to say, whether the record of the quantity exported is now as complete as it was when gold was subject to duty. The repeal of this duty on gold took effect on the 1st October last, and up to that date only 2,750 ozs. had been exported. So far the small quantity sent out of the Colony might be accounted for by assuming that a quantity had been kept back in anticipation of the repeal of the duty; and if that had been the case a comparatively large quantity would probably have been exported between that date and the end of the year; but, so far as the records at the Custom House show, no gold, the produce of this Colony, has been sent out of the Colony since the duty was repealed, and consequently we appear to have exported in 1879 £36,426 worth less gold than we exported in 1878. As regards the decrease in the quantity sent to the Mint for coinage, that might have been accounted for by the repeal of the gold duty affording greater facilities for sending gold out of the Colony; but if the records of the Custom House accurately represent the quantity exported, the public has not availed itself of the facilities thus afforded.

The following table shows the quantity of gold won in the several districts, as returned by the Mining Registrars, compared with the quantities sent to the Mint, from which it will be seen that the quantities reported by the Mining Registrars exceeds the quantity sent to the Mint by 2,175 ozs.

RETURNS of Gold for 1879 from Mint and Mining Registrars compared.

	Mint.	Mining Registrars.	Excess.	Deficiency.
	ozs.	ozs.	ozs.	ozs.
Bathurst	10,141	9,064	1,077	.....
Tambaroora and Turon	15,365	15,595	.....	230
Mudgee	17,880	21,637	.....	3,807
Lachlan	6,458	9,443	.....	2,985
Southern	8,361	14,866	.....	6,505
Tumut and Adelong	13,582	16,534	.....	2,952
Peel and Uralla	3,305	8,165	.....	4,860
New England and Clarence .....	.....	3,660	.....	3,660
Hunter and Macleay	8,854	10,016	.....	1,162
Not within a mining district .....	.....	45	.....	45
Locality unknown	22,954	.....	22,954	.....
			24,031	26,206
				24,031

The quantity returned by the Mining Registrars exceeds the quantity sent to the Mint by... 2,175

The returns furnished by the Mining Registrars, for the year 1879, as compared with their returns for 1878, show an increased yield equal to 9,809 ounces; but this result cannot be accepted as evidence that a greater quantity of gold was won in 1879 than 1878, because these returns are, notwithstanding the praiseworthy efforts of the gold-fields' officials, known to be incomplete, from the difficulty of reaching all the miners engaged in getting gold, and from the fact that in many places no returns can be obtained from miners working on private lands, or from Chinese. However, there is no reason to suppose that these returns err in the direction of exaggeration—they are simply incomplete.

MINING Registrars' Returns of Gold for 1878 and 1879 compared.

	1878.	1879.	Increase.	Decrease.
	ozs.	ozs.	ozs.	ozs.
Bathurst.....	8,309	9,064	755	.....
Tambaroora and Turon.....	20,923	15,595	.....	5,328
Mudgee	8,897	21,687	12,790	.....
Lachlan	10,059	9,443	.....	616
Southern	14,128	14,866	738	.....
Tumut and Adelong.....	17,184	16,534	.....	650
Peel and Uralla.....	16,358	8,165	.....	8,193
New England and Clarence ...	3,408	3,660	252	.....
Hunter and Macleay .....	.....	10,016	10,016	.....
Not within a mining district ...	.....	45	45	.....
	99,266	109,075	24,596	14,787
Less decrease			14,787	
Increase in yield for 1879			9,809	

The following table shows the results obtained from the treatment of parcels of washdirt in various parts of the Colony, and though it is to be regretted that the results obtained in a much larger number of instances cannot be ascertained, owing to the miners not keeping any record of the quantity of material operated upon, the returns furnished show that the officers on the gold-fields have performed this part of their duty with commendable zeal. If the mines in this Colony were owned by incorporated companies, having a manager and other officers whose duty it is to keep records and furnish returns, the collection of statistical information would be comparatively easy; but where the mines are, as a rule, owned by the miners who work them, no such records are necessary, and consequently are, in very few instances, kept; indeed were it not for the fact that many of them have to send their washdirt to public puddling machines to be operated upon they would have but a very vague idea how much earth had been washed during the year.

COMPARATIVE statements of average yields from Alluvial Mines for 1878-9.

1878.				1879.			
District.	Quantity.	Average per Ton.	Yield of Gold.	District.	Quantity.	Average per Ton.	Yield of Gold.
	Tons.	ozs. dwts. grs.	ozs. dwts. grs.		Tons.	ozs. dwts. grs.	ozs. dwts. grs.
Bathurst	23,715	0 3 4-02	3,756 5 0	Bathurst	29,911	0 3 16-45	5,512 0 0
Mudgee	1,610	0 0 12-00	40 5 0	Tumbaroora & Turron	475	0 9 7-82	221 0 0
Lachlan	17,787½	0 4 4-79	3,735 3 14	Lachlan	18,064	0 4 9-29	3,980 10 6
Southern	27,410	0 0 17-67	1,909 2 12	Southern	18,772	0 0 13-87	542 9 6
				Peel & Uralla	1,300	0 7 17-35	502 0 0
				Not within a mining district	185	0 4 20-75	45 0 0
Total	70,522½	0 2 10-13	8,540 16 2	Total	68,697	0 3 8-34	10,782 19 12

The results obtained in 1879, so far as disclosed by the returns, compare favourably with those of 1878, the average yield being 3 dwts. 3·34 grs. per ton in 1879 as against 2 dwts. 10·18 grs. per ton in 1878. The quantity of washdirt included in last year's returns, however, is less than the quantity in the return for the preceding years by 1,825 tons. Unfortunately the returns from the Mudgee District furnish no particulars of the quantity of washdirt treated during the year, and the returns in respect to some of the principal claims at Araluen are in a like manner defective.

The following table shows the average yield per ton of certain parcels of quartz crushed in some of the districts:—

COMPARATIVE statement of average yields from Quartz Mines for 1878-9.

1878.				1879.			
District.	Quantity.	Average per Ton.	Yield of Gold.	District.	Quantity.	Average per Ton.	Yield of Gold.
	Tons cwt. qrs.	ozs. dwts. grs.	ozs. dwts. grs.		Tons cwt. qrs.	ozs. dwts. grs.	ozs. dwts. grs.
Bathurst	2,271 0 0	0 11 14·36	1,317 0 0	Bathurst	663 0 0	0 9 14·22	313 4 0
Tambarooa & Turon	8,667 0 0	0 10 18·93	4,675 8 12	Tambarooa & Turon	8,220 10 0	0 15 14·92	2,515 9 14
Mudgee	2,245 0 0	0 12 0·00	1,347 0 0	Mudgee	1,746 0 0	0 16 8·99	1,411 6 13
Lachlan	1,543 0 0	0 10 19·64	834 13 0	Lachlan	2,201 10 0	0 13 13·45	1,492 13 19
Southern	2,022 5 0	0 15 3·74	1,532 10 0	Southern	1,198 15 0	0 12 13·14	777 16 0
Tumut and Adelong	6,787 8 0	1 3 9·07	8,070 9 20	Tumut and Adelong	2,092 18 0	1 5 1·12	3,811 7 11
Peel and Uralla	2,385 18 0	3 5 20·71	7,888 18 0	Peel and Uralla	796 0 0	1 7 10·76	1,092 9 0
New England and Clarence	79 0 0	2 8 18·53	192 13 0	New England and Clarence	550 0 0	1 0 16·33	568 14 6
				Hunter and Macleay	3,105 10 0	2 17 2·19	8,864 18 1
	26,000 11 0	0 19 5·73	26,858 12 8		16,464 3 0	1 5 7·81	20,847 13 15

The quantity of quartz treated, of which returns have been furnished, is not so large for 1879 as for 1878 by 9,586 tons, but the average is considerably higher, being 1 oz. 5 dwts. 7·81 grs. per ton for last year as compared with 19 dwts. 5·73 grs. per ton for the previous year.

From the tables annexed to this report it will be seen that the number of miners on our gold-fields, including Chinese, is 8,102, and the quantity of gold won was 109,849 ozs., valued at £407,218 13s. 5d. The quantity of gold won divided amongst the above number of miners gives as the result of each man's labour for the year 13 ozs. 10 dwts. 16·11 grs., the money value of which is £50 5s. 2½d. per man. This result is not, I feel satisfied, as satisfactory as would be obtained if the quantity of gold won and the number of miners actually employed upon our gold-fields throughout the year could be accurately ascertained. For example, many of the silver mines are held under the Gold-mining Regulations, because the lodes therein contain a certain quantity of gold, and thus the miners employed upon them are counted as gold-miners, and properly so, because they raise gold though the bulk of their earnings is from silver. As stated in a previous part of this report, I do not believe 5,000 miners were constantly engaged in gold-mining operations throughout the year, and I have no doubt that the quantity of gold won during the year exceeds that given above. However, in the absence of accurate returns those available must be accepted.

During the year the following assays were made by Mr. W. A. Dixon, F.C.S., F.I.C.

GOLD ORES.

- No. 1. Shale containing fossil shells and a little pyrites from Bungonia, sent to be assayed for gold and silver, but contained only traces of gold—less than 5 grs. per ton.
- No. 2. Quartz with arsenical pyrites from the Southern District, contained—Gold and silver, 4 dwts. per ton.
- No. 3. Quartz with drusy cavities from near Bungonia contained—Gold, 13 ozs. 0 dwts. 15 grs. per ton; silver, 1 oz. 1 dwt. 19 grs. per ton. 8 oz. 1 dwt. 10 grs. per ton of the gold was so coarse as to be retained by the sieve on pounding the sample.

- No. 4. Tailings from Cargo, containing iron and copper pyrites, contained—Gold, 1 oz. 10 dwts. per ton.
 No. 5. Quartz with mammillated oxide of manganese and micaceous (specular) iron ore from Boro, sent to be assayed for gold and silver, but contained neither.
 No. 6. Quartz with much ferric oxide from Boro, sent to be assayed for gold and silver, but contained neither.
 No. 7. Crystalline quartz with iron pyrites and stained with ferric oxide, from Barrington, contained—Gold, 3 dwts. 14 grs. per ton.
 No. 8. Red granite, from Boro, containing iron pyrites, contained traces only of gold and silver, less than 5 grs. per ton.
 No. 9. Quartz with much blende and iron pyrites, from Currajong reef, Adelong, contained—Gold, 58 ozs. 14 dwts. per ton.
 No. 10. Quartz stained with oxide of iron, containing iron pyrites and gold freely disseminated through it, from Copeland, yielded—Gold, 76 ozs. 17 dwts. 5 grs. per ton; silver, 9 ozs. 12 dwts. per ton.
 No. 11. Crushed iron pyrites, from Major's Creek, contained—Gold, 3 ozs. 15 dwts. 3 grs. per ton; silver, traces.
 No. 12. Quartz with ferric oxide, magnetite, and iron pyrites, sent to be assayed for gold, of which it contained traces only, less than 5 grs. per ton. From Willow Farm, near Yass.
 No. 13. Jasperoid rock with quartz, sent to be assayed for gold and silver, but contained neither.
 No. 14. Quartz with mispickel, from 16 miles east of Glen Innes, contained—Gold, 7 ozs. 13 dwts. 10 grs. per ton; silver, 1 dwt. 5 grs. per ton.
 No. 15. Quartz with metallic bismuth, carbonate of bismuth, molybdic oxide and sulphide, from quartz reef 4 feet wide, near Tenterfield, contained—Gold, 1 oz. 4 dwts. 10 grs. per ton; silver, 8 dwts. 10 grs. per ton; bismuth, 60·09 per cent.

The four following ores were sent as silver ores from Moruya, but as they contain more gold than silver they are here included with the gold ores. The samples were in coarse powder, and contained mispickel, galena, and blende.

No. 16.									
Specific gravity, 3·11.									
per cent.					per cent.				
Arsenic	...	...	...	13·48	=	Mispickel	...	...	28·61
Lead	...	...	...	·96	=	Galena	...	...	1·11
Zinc	...	...	...	1·20	=	Blende	...	...	1·79
Gold	...	...	...	...	2 ozs. 10 dwts.	10 grs.	per ton.		
Silver	...	...	...	...	0 ozs. 16 dwts.	10 grs.	per ton.		

No. 17.									
Specific gravity, 2·94.									
per cent.					per cent.				
Arsenic	...	...	...	8·80	=	Mispickel	...	...	18·85
Lead	...	...	...	1·62	=	Galena	...	...	1·86
Zinc	...	...	...	0·34	=	Blende	...	...	0·51
Gold	...	...	...	...	4 ozs. 10 dwts.	per ton.			
Silver	...	...	...	...	12 dwts. 19 grs.	per ton.			

No. 18.									
Specific gravity, 2·95.									
per cent.					per cent.				
Arsenic	...	...	...	7·07	=	Mispickel	...	...	15·16
Lead	...	...	...	3·38	=	Galena	...	...	3·90
Zinc	...	...	...	·94	=	Blende	...	...	1·49
Gold	...	...	...	...	11 ozs. 10 dwts.	10 grs.	per ton.		
Silver	...	...	...	...	1 oz. 12 dwts.	20 grs.	per ton.		

No. 19.									
Specific gravity, 2·59.									
per cent.					per cent.				
Arsenic	...	...	...	2·90	=	Mispickel	...	...	6·22
Lead	...	...	...	1·01	=	Galena	...	...	1·16
Zinc	...	...	...	Traces	=	Blende	...	...	Traces.
Gold	...	...	...	...	1 oz. 16 dwts.	per ton.			
Silver	...	...	...	...	9 dwts. 14 grs.	per ton.			

The arsenic in these specimens was determined as magnesium-ammonium-arseniate after previous precipitation as ferric arseniate, the lead as sulphate, and the zinc as oxide after precipitation as sulphide and carbonate. See also from the same mine, under the head of Silver, Nos. 50, 51, and 52.

- No. 20. Quartz, from near Grafton, contained—Gold, 14 dwts. 19 grs. per ton; silver, 1 dwt. 14 grs. per ton.
 No. 21. Dark-coloured quartz, with iron pyrites, from near Grafton, contained—Gold, 3 ozs. 12 dwts. 5 grs. per ton; silver, 8 dwts. 5 grs. per ton.

- No. 22. Ferruginous quartz, with iron pyrites, galena, and blue and green carbonates of copper, from Shannon Vale, Glen Innes, contained—Gold, 17 dwts. 5 grs. per ton; silver, 8 dwts. 19 grs. per ton.
- No. 23. A mass of nearly pure copper and iron pyrites, from the Mudjee District, contained—Gold, 2 oss. 12 dwts. 5 grs. per ton; silver, 2 oss. 11 dwts. per ton; copper, 21·28 per cent.
- No. 24. Mispickel, from Moruya, contained—Gold, 5 oss. 2 dwts. 19 grs. per ton; silver, 10 oss. 12 dwts. 20 grs. per ton.
- No. 25. Very coarsely-crushed tailings, containing iron pyrites, locality unknown, contained—Gold, 4 dwts. 14 grs. per ton.
- No. 26. Ferruginous quartz, coated with clay, from Kookgrabookgra, Glen Innes, contained—Gold, 2 oss. 17 dwts. 14 grs. per ton; silver, 9 dwt. 5 grs. per ton.
- No. 27. Quartz, with disseminated crystals of iron pyrites, from Hanging Rock, near Nundle, contained—Gold, 2 dwts. 10 grs. per ton; silver, 15 grs. per ton.
- No. 28. Tailings, from Hanging Rock, consisting chiefly of iron and arsenical pyrites, contained—Gold, 2 oss. 13 dwts. 14 grs. per ton; silver, 6 dwts. 19 grs. per ton.
- No. 29. Stone, with iron pyrites, from Hanging Rock, contained—Gold, 3 dwts. 5 grs. per ton; silver, 14 grs. per ton.
- No. 30. Tailings, consisting chiefly of iron and arsenical pyrites, from Ournie, contained—Gold, 21 oss. 16 dwts. 19 grs. per ton; silver, 43 oss. 8 dwts. per ton.
- No. 31. Similar to the last, and from the same place, contained—Gold, 164 oss. 12 dwts. 10 grs. per ton; silver, 162 oss. 8 dwts. 10 grs. per ton.
- No. 32. Calcareous schist, containing disseminated crystals of mispickel, from the Star of Peace Mine, Hill End, contained—Gold, 1 oz. 8 dwts. 19 grs. The pyrites dressed from the crushed stone yielded—89 oss. 11 dwts. 5 grs. per ton.
- No. 33. Arsenical pyrites, from Lucknow, contained—Gold, 1,621 oss. 11 dwts. 11 grs. per ton.

The following tables of analyses, made by Mr. Dixon and Professor Liversidge respectively, are republished for general information:—

TABLE showing the result of analysis of samples of Quartz and other ores made by Mr. W. A. Dixon, F.C.S., F.I.C., during 1878.

No.	Locality.	Gold per ton.	Silver per ton.	Remarks.
		oss. dwt. grs.	oss. dwt. grs.	
1	Marulan	0 9 5	0 3 5	.....
2	"	0 8 5	0 5 0	.....
3	Box Ridge, Hill End	15 2 19	Traces.	Auriferous brown coloured earth and shale.
4	Moruya	1 14 10	0 17 14	Quartz with mispickel.
5	Slippery Creek, near Oberon	2 7 10	0 19 19	Quartz with mispickel.
6	New Guinea .....	.....	.....	Waterworn nodules of quartz containing specks of iron pyrites, from New Guinea, sent to be assayed for gold and silver, contained 2 dwts. per ton of both metals together, the button being almost white.
7	New Guinea	0 3 5	.....	Black sand largely composed of magnetite.
11	"	47 16 5	Traces.	Quartz containing galena, copper pyrites, and traces of stibnite, amounting in all to 15·8 per cent., chiefly galena.
12	Between Mudjee and Wallerawang .....	.....	.....	Gold and silver 15 grs. per ton; copper, 5·5 per cent., contained copper pyrites and galena.
13	" .....	.....	.....	Consisted chiefly of iron and arsenical pyrites with traces of lead, antimony, zinc, silver, and gold.
15	Clear Creek, Peel River .....	.....	.....	Magnetite contained gold and silver 2 dwt. 5 grs. per ton.
16	Shoalhaven .....	.....	.....	Sent to be tested for gold, silver, and mercury, of which it contained none; consisted of ferric and magnetic oxides of iron with a small quantity of manganese dioxide mixed with earthy matter.
18	Bungendore	0 6 5	0 1 5	Surface quartz stained with oxide of iron.
21	Ournie	2 0 10	0 1 5	Mispickel. This sample yielded by amalgamation without roasting—free gold, 1 oz. 19 dwts. 0 grs. per ton; silver, 5 dwts. per ton.
22	Near Goulburn	Traces	.....	Decomposed quartz, much stained with ferric oxide. Sent to be tested for gold, of which it contained a trace less than 5 grs. per ton.
23	Isabella Reef, Ournie	4 0 5	Traces.	Quartz with arsenical pyrites
26	Star of Peace G. M. Company, Hill End.	32 19 14	Traces.	Quartz from a depth of 700 feet. The specimen was reported to be an average piece of stone, and was studded with minute specks of gold.
27	Glen Innes	0 0 5	0 16 0	Grey quartz containing finely disseminated pyrites.
28	Barrington	0 4 5	0 2 10	Quartz and slate containing iron and arsenical pyrites.
29	Near Peelwood .....	.....	.....	Quartz with talc containing iron and arsenical pyrites. Gold and silver, 1 dwt. 5 grs. per ton.
30	" .....	.....	.....	Grey steatite with iron and arsenical pyrites. Gold and silver, 2 dwts. 5 grs. per ton; copper traces.
31	" .....	.....	.....	Slate with iron and arsenical pyrites. Gold and silver 3 dwts. per ton; copper, 0·41 per cent.
32	Little River, Abercrombie .....	.....	.....	Quartz with copper and iron pyrites. Gold and silver, 2 dwts. 19 grs.; copper, 4·71 per cent.

TABLE of analysis of tailings, &c., made by Mr. W. A. Dixon, F.C.S., F.I.C.

No.	Locality.	Gold per ton.	Silver per ton.	Remarks.
9	Ironbarks (Beehmer's machine)	ozs. dwt. gra. 5 13 5	traces.	Pyritous tailings. Brownish coloured sand containing iron pyrites.
10	Gulgong	4 15 5	traces.	Quartz tailings with pyrites.
14	Grenfell Consols Co.	0 2 20	2 dwt. 5 gra.	Tailings, sand.
17	Pretty Gully, near head of Clarence River.	0 10 10	traces.	Iron pyrites.
24	Isabella Reef, Ournie	2 8 0	.....	Tailings.
25	"	5 0 10	.....	Blanketings.

TABLE showing the results of analysis of samples of Quartz-tailings and other waste gold-bearing products, made by Professor Liversidge, F.C.S., F.G.S., &c., &c., for this Department.

Quartz tailings.

No.	Locality.	Gold per ton.	Silver per ton.	Remarks.
43	Mitchell's Creek, near Bathurst	ozs. dwts. gra. 0 7 4	ozs. dwts. gra. traces	Composed of rather coarse particles of quartz, mixed with loose powdery oxide of iron. This sample has the appearance of having been calcined, the iron oxide is therefore probably derived from the decomposition of pyrites
44	Consoles' Engine, Grenfell	1 6 18	1 4 4	Of a pale brown colour
45	Mathieson's Engine, Grenfell	0 3 22	traces	Quartz grains mixed with a buff-coloured powder
46	Slee's Engine, do.	0 3 22	traces	Nearly white in colour
47	Victoria Mill, do.	0 1 7	traces	Do.
48	Vaughan's Engine, do.	1 2 23	0 0 14	Of a yellowish brown colour
49	Kirkpatrick's Engine, do.	0 9 19	traces	Mixed with small agglutinated lumps of iron oxide
50	Nerrimunga, county of Argyll	0 4 13	traces	Of a greenish colour, mixed with pyrites
51	Nerrimunga, do.	0 7 19	0 13 2	Of a gray colour
52	Nundle, county of Parry	0 6 10	traces	White in colour
54	Hill End	0 1 7	traces	Calcined, mixed with iron oxide
55	Do.	0 1 7	traces	Of a brown colour
56	Do.	0 2 14	traces	Roasted, of a brown colour
57	Do.	0 3 6	traces	Of a brown colour
59	Do.	0 2 14	traces	Calcined, mixed with much red oxide of iron
60	Clear Creek	0 9 19	11 11 5	White quartz, mixed with other substances, giving the tailings a pale brown colour
61	Do.	0 8 11	12 18 18	Pale brown colour, much the same as No. 60
62	Tumberumba	0 5 21	traces	White in colour, the quartz particles are very transparent, and have a very vitreous lustre, therefore very glassy looking
63	Dragon Gold-mining Co., Hill End..	0 3 22	traces	Of a brown colour
66	Excelsior Machine, Tambaroora	0 3 6	traces	Roasted, of a pinkish colour
67	Red Hill Machine, do.	0 7 4	traces	White in colour
68	Independent Machine, do.	0 0 15	traces	Light brown colour, mixed with a few uncrusted lumps
69	Sydney and Tambaroora Machine, do	0 5 5	traces	Of a pale brown colour
73	Britannia Reef, Forbes	0 1 23	traces	Yellow brown colour
74	Strickland's Reef, do.	0 16 23	0 6 11	Finely divided, brown in colour
75	Williams's Battery, Adelong	0 3 22	traces	Nearly white in colour
76	Do.	0 1 7	traces	Do.
78	Braidwood	0 8 11	traces	Calcined
79	Burne's Machine, Wiseman's Creek, Oberon	0 9 3	0 12 9	Of a brown colour
80	Lambert and Davis's, do. do.	0 2 14	traces	
81	Whelan's Machine, Glendwl, Oberon	0 0 15	traces	In fine state of division, of a light brown colour
82	Long Flat, Major's Creek	0 1 7	traces	
83	Big Hill, do.	0 1 7	traces	Brown in colour
85	Hargraves	0 1 7	traces	Coarse-grained, calcined
86	Belmore	0 6 10	0 19 17	Almost white in colour
88	Tuena	1 0 21	0 16 3	Calcined, of an ordinary brown colour
89	Do.	0 3 6	traces	Of a greenish gray colour, contains pyrites, and a few rounded pebbles
90	Do.	0 13 17	traces	Milky-white colour
91	Tower Hill Co's. Battery, Dalmorton, Little River	0 1 23	traces	White quartz, mixed with a gray powder, probably derived from slate casing or matrix
92	Lombardy Co's. Battery, Solferino ..	0 7 20	traces	Of a brown colour
93	Band of Hope Co., do.	0 0 15	.....	Of a very pale brown colour
94	Enterprise Battery, Cundiebung, near Dalmorton, Little River	0 7 4	traces	
95	Faugh-a-Ballagh Reef, Oberon	1 15 22	0 7 4	Mixed with pyrites
96	King of the West, Trunkay	0 4 13	traces	Of a gray colour, from a depth of 50 to 120 feet
97	Do., do.	0 12 9	traces	A yellow-brown powder, from the discharge shoot, after passing through the amalgamating barrels. Depth, 500 feet
98	Lady Bowen Machine, do.	9 1 23	traces	Very pale brown colour, from depth of 500 feet
99	Trunkay Creek Quartz-mining Co., Trunkay	0 1 7	traces	Of a light brown colour. Depth, 300 feet

Other waste gold-bearing products.

No.	Locality.	Gold per ton.			Silver per ton.			Remarks.
		ozs.	dwt.	grs.	ozs.	dwt.	grs.	
53	Nundle, county of Parry	0	1	7				Of a greenish colour, containing friable lumps (sludge)
58	Hill End	0	0	15				Containing light coloured subangular argillaceous pebbles, mixed with a little quartz (sludge)
64	Dragon Gold-mining Company, Hill End	0	7	4	0	13	2	Colour dark brown (blanketing)
65	Do.	0	1	7				A mass of soft white pipeclay (waste)
70	South Lead, Forbes	0	1	7				Yellowish-brown colour agglutinated into lumps (sludge)
71	Victoria Lead, Forbes	0	4	13				Clay coloured, lumpy, much the same as the last (sludge)
72	Mathieson's Lead, Forbes	0	6	10				Red-coloured, loose clay-like material (sludge)
77	Braidwood	0	3	22				Principally clay, mixed with roots of plants, and containing fragments of quartz leaders (sludge)
84	Spring Creek, Major's Creek	0	17	15	1	12	0	Apparently a calcined pyrite, a dark chocolate brown powder
87	Cowra	0	0	15				An argillaceous sharp gravel, i.e., the fragments are not water-worn (sludge)

COAL.

THOUGH there can be little doubt that coal was the mineral first discovered after the settlement of New South Wales, the several accounts given of that important event differ both as to date and locality. According to some authorities the discovery was made in 1796, while others fix the date in 1797. Again, some say coal was first found in a bay near Port Stephens, probably Newcastle Harbour—while others say it was found in a steep cliff about seven leagues south of Point Solander, probably Coal Cliff. It is not, however, a matter of great importance when or where made, it is sufficient for us to know that we have apparently an inexhaustible supply of coal suitable for all the purposes of commerce and of daily use.

During the first thirty or forty years after the discovery little was done towards developing this branch of our mineral wealth. The only mine open in the first instance was the Government colliery, which was worked by convict labour, until 1817, by means of a drift made on the sea-shore penetrating a seam of coal that was visible in the sandstone that forms the south headland of the entrance to the Hunter River. Subsequently the colliery was worked by means of a perpendicular shaft 111 feet deep, the coal being raised by means of a windlass. Vessels were supplied with coal during the time the colliery was worked by the Government at about 10s. per ton. The quantity of coal raised by the Government cannot be accurately ascertained, but from publications and papers to which I have been able to refer, I do not think the output would exceed 50,000 tons, the value of which may be estimated at £25,000.

According to Bennett's History of New South Wales, the first export of coal was in 1801, when a small brig, called the *Anna Joseph*, which had been built in the Colony, was freighted with Colonial timber and coals, and dispatched to the Cape of Good Hope, where the coals found a ready market at £6 per ton.

M. Peron speaking of Port Jackson in 1802, says he saw some vessels laden with coal for the Cape of Good Hope and India, showing that coal quickly became an article of export. While according to Macarthur's work on New South Wales, the export of coal in 1828 reached 974 tons.

The Government coal mine at Newcastle became, in December, 1829, the property of the Australian Agricultural Company, subject to certain conditions which were construed by the Company as conferring upon them for a period of thirty-one years the exclusive right to mine for coal in this Colony. The monopoly was, however, terminated with the concurrence of the Company in 1847, Mr. Threlkeld and other gentlemen having for some years previously been engaged in working the coal-seams on their respective properties.

The Directors of the Australian Agricultural Company appear to have sent miners from England to work the mine in 1840.

As showing the rapidity with which the coal trade grew, Captain King, the Company's Commissioner, under date 3rd September, 1840, says: "There are between 2,000 and 3,000 tons of shipping in Newcastle harbour waiting for coals."

In 1841 or 1842 a colliery was opened at Lake Macquarie by the Rev. Mr. Threlkeld, and within a few years later several mines were opened in the Newcastle District by Mr. Brown, Mr. Turner, Mr. Eales, and others. Since then the coal trade has gradually increased until coal-mining has become one of the most important industries in this Colony.

In previous reports I have published the quantities of coal raised since 1829, as gathered by me from public records. Further investigation has, however, convinced me that some of the figures in those reports are inaccurate, and I therefore submit the following as a more accurate statement of the output from the opening of our coal-seams to the end of 1857.

QUANTITY and value of Coal raised from the opening of the Coal-seams to 1857 inclusive.

Year.	Quantity.	Average per ton.	Value.	Year.	Quantity.	Average per ton.	Value.
Prior to		£ s. d.	£			£ s. d.	£
1829	50,000	0 10 0	25,000	1845	22,324	0 7 10'27	8,769
1829	780	0 10 1'23	394	1846	38,965	0 7 0'46	13,714
1830	4,000	0 9 0'00	1,800	1847	40,732	0 6 9'01	13,750
1831	5,000	0 8 0'00	2,000	1848	45,447	0 6 3'38	14,275
1832	7,143	0 7 0'00	2,500	1849	48,516	0 6 0'45	14,647
1833	6,812	0 7 6'73	2,575	1850	71,216	0 6 6'77	23,375
1834	8,490	0 8 10'00	3,750	1851	67,610	0 7 6'51	25,546
1835	12,392	0 8 10'19	5,483	1852	67,404	0 10 11'33	36,885
1836	12,646	0 9 1'06	5,747	1853	96,809	0 16 1'51	78,059
1837	16,083	0 9 8'81	5,828	1854	116,642	1 0 5'63	119,380
1838	17,220	0 9 9'05	8,399	1855	137,076	0 12 11'96	89,082
1839	21,283	0 9 9'73	10,441	1856	189,960	0 12 4'6	117,906
1840	30,256	0 10 10'86	16,498	1857	210,434	0 14 0'97	148,158
1841	34,841	0 12 0'00	20,905				
1842	39,900	0 12 0'00	23,940		1,468,961	0 11 10'72	869,391
1843	25,862	0 12 6'54	16,222				
1844	23,118	0 10 8'34	12,363				

Prior to 1858 no complete record can be found of the quantity of coal exported, but since the beginning of that year we have sent to the other Colonies 7,711,886 tons, and to Foreign ports 4,712,890 tons, as will be seen by the following table.

TABLE showing the quantities and average value per ton of Coal exported to Intercolonial and Foreign Ports respectively, the quantity of Coal consumed in this Colony, and the average price per ton of the total output of the Collieries, from 1858 to 1879 inclusive.

Years.	Exports to Intercolonial Ports.			Exports to Foreign Ports.			Total Exports.			Home consumption.	Total Output and Value.		
	Quantity.	Average per ton.	Value.	Quantity.	Average per ton.	Value.	Quantity.	Average per ton.	Value.		Quantity.	Average per ton.	Value.
Tons.	£ s. d.	£	Tons.	£ s. d.	£	Tons.	£ s. d.	£	Tons.	Tons.	£ s. d.	£ s. d.	
1858.....	101,488	0 15 1-67	76,824	12,089	1 0 1-85	12,132	113,527	0 15 8-05	83,956	102,870	216,397	0 14 11-84	102,162 0 0
1859.....	130,586	0 14 6-97	94,312	44,349	0 17 5-27	38,672	173,935	0 15 3-49	132,964	134,278	308,213	0 13 3-14	294,571 0 0
1860.....	140,183	0 14 10-85	104,471	93,094	0 16 11-10	79,330	233,577	0 15 8-57	183,761	134,985	368,562	0 12 3-26	228,403 0 0
1861.....	157,278	0 15 2-25	119,433	50,502	0 16 5-37	41,532	207,780	0 15 5-92	160,965	134,287	342,067	0 12 9-52	218,820 0 0
1862.....	185,427	0 15 0-55	147,019	113,355	0 17 4-34	98,408	308,732	0 15 10-75	245,422	167,740	476,522	0 12 9-73	305,234 0 0
1863.....	213,909	0 13 8-40	146,532	94,129	0 17 6-10	73,649	298,038	0 14 9-30	220,181	135,851	433,889	0 10 10-06	236,230 0 0
1864.....	223,539	0 10 3-74	146,199	83,927	0 14 10-90	66,239	372,466	0 11 4-91	212,488	176,546	549,012	0 9 10-10	270,171 0 0
1865.....	292,664	0 9 11-33	146,129	90,304	0 15 0-79	68,029	382,963	0 11 2-20	214,168	202,554	585,525	0 9 4-43	274,303 0 0
1866.....	344,194	0 9 2-98	159,175	196,711	0 14 4-53	141,413	540,905	0 11 1-37	300,538	233,338	774,238	0 8 4-44	324,049 0 0
1867.....	312,101	0 9 4-35	146,111	161,256	0 13 3-47	107,148	473,357	0 10 8-40	253,259	296,655	770,012	0 8 10-79	342,655 0 0
1868.....	329,052	0 9 5-76	155,975	213,964	0 12 5-29	136,226	548,036	0 10 7-96	292,301	406,126	964,231	0 8 9-08	417,809 0 0
1869.....	340,466	0 8 9-07	149,059	255,087	0 11 8-31	149,136	696,553	0 10 0-16	328,196	324,321	919,774	0 7 6-32	346,146 0 0
1870.....	335,564	0 8 6-02	142,656	242,825	0 10 3-57	125,025	578,389	0 9 3-07	287,981	290,175	868,564	0 7 3-54	316,836 0 0
1871.....	373,891	0 8 6-91	162,470	196,538	0 10 1-22	94,220	565,429	0 9 0-36	256,960	333,365	898,784	0 7 0-47	316,340 0 0
1872.....	394,032	0 8 8-11	170,947	275,058	0 9 11-46	136,914	669,110	0 9 2-42	307,961	343,316	1,012,426	0 7 9-92	396,198 0 0
1873.....	425,937	0 12 9-32	272,110	347,142	0 14 7-59	233,979	773,079	0 13 7-32	536,089	419,733	1,192,862	0 11 1-94	695,747 0 0
1874.....	467,563	0 13 8-30	320,119	405,442	0 15 4-76	312,123	872,980	0 14 5-31	632,247	431,587	1,304,567	0 12 1-37	790,224 0 0
1875.....	513,853	0 13 7-77	354,074	408,154	0 15 6-64	317,409	927,007	0 14 5-84	671,433	462,722	1,323,729	0 12 3-39	819,429 17 2
1876.....	542,962	0 13 8-45	372,045	325,965	0 15 6-45	233,166	868,317	0 14 4-70	625,311	451,101	1,319,913	0 12 2-06	803,300 5 6
1877.....	563,757	0 13 8-64	386,740	351,970	0 14 10-31	262,237	915,737	0 14 2-08	646,977	522,544	1,444,271	0 11 10-74	858,998 8 2
1878.....	623,323	0 13 8-77	427,964	383,097	0 14 7-09	280,452	1,006,420	0 14 0-38	708,406	569,077	1,576,497	0 11 8-28	920,998 7 4
1879.....	621,087	0 13 6-75	421,196	376,962	0 14 6-13	273,509	968,049	0 13 11-05	694,707	585,332	1,638,381	0 12 0-12	950,578 13 3
	7,711,866	0 11 11-82	4,621,532	4,712,394	0 14 1-13	3,320,963	12,424,231	0 12 9-39	7,940,510	6,304,509	19,223,741	0 10 6-90	10,167,331 16 5

From the foregoing table it will be seen that our total output of coal from the commencement equals 20,640,075 tons, valued at £11,036,722 16s. 5d.; and our annual output now exceeds 1,500,000 tons, of which about two-thirds are exported.

From the foregoing table it will also be seen that the output for 1879 exceeds that of 1878 in quantity by 7,884 tons, and in value by £29,942 10s. 11d—the average price per ton in 1879 exceeding that of 1878 by 3·84d. per ton.

With an increased demand the output could be largely augmented without opening new pits or employing more miners, by simply giving those we have full employment; whether the demand could be increased by reducing the price of coal is a matter about which great diversity of opinion exists, but it is quite certain that it would scarcely be possible to increase the demand beyond the power of supply, because not only are our coal seams practically inexhaustible, but as a rule the coal is easily and inexpensively worked.

In many cases the seams can be opened up and worked by means of an adit, and the features of the surrounding country are such as to present few engineering difficulties in the way of constructing the tramways, roads, &c., necessary for sending away the coal.

The seams vary in thickness, from 3 feet to 25 feet, and are nearly horizontal.

Although fire-damp is almost unknown in our collieries, strict attention to ventilation is enforced. And, as will be seen by the report of the Examiner of Coal Fields, the number of accidents in proportion to the output of coal shows that commendable care and vigilance is exercised, not only by the officers of this department charged with the supervision of our collieries, but also by the owners of the mines and their managers.

In few countries is coal found in such abundance and under such favourable circumstances, consequently our colliery proprietors should be, and probably are, able to compete successfully with those of most other countries in markets not too remote from our shores.

COMPARATIVE STATEMENT of Output of Coal

	1874.		1875.	
	Tons.	Value.	Tons.	Value.
Output, Northern District	1,126,313	£ 711,476 19 3	1,160,659	£ 730,799 15 8
Increase as compared with previous year ... ..	.....	.....	34,346	19,322 16 5
Decrease do. do. do. ... ..	.....	.....	.....	.....
Output, Western District	35,200	11,422 10 0	19,065	6,684 15 6
Increase as compared with previous year ... ..	.....	.....	.....	.....
Decrease do. do. do. ... ..	.....	.....	16,135	4,737 14 6
Output, Southern District	137,287	63,634 0 0	150,305	83,955 6 0
Increase as compared with previous year ... ..	.....	.....	13,018	20,321 6 0
Decrease do. do. do. ... ..	.....	.....	.....	.....

With such an abundant supply of coal easily obtained it is not surprising that manufactures have increased so rapidly; and there can be little doubt that as our population and capital increase these manufactures will be augmented to such an extent that our home consumption will equal the output of our existing collieries when in full work, and our rapidly increasing export trade will necessitate the opening up of other mines.

While to the north, south, and west of Sydney coal is found considerably above sea-level, it is supposed that in the immediate vicinity of the metropolis the seams will be at least 1,500 feet or 2,000 feet below it; nevertheless boring operations have been carried on by means of the diamond drill to find these seams, as it is thought by the explorers that notwithstanding the greater depth coal raised in the neighbourhood of Sydney can compete successfully with that brought from the northern, southern, and western coal fields, and that greater facilities will thereby be afforded for coaling ships in Sydney harbour.

The report furnished by the Examiner of Coal Fields contains some interesting tables relating to the output of coal as compared with the number of miners employed, the export of coal from the Port of Newcastle, and the export of coal from Great Britain. It also contains some valuable sections obtained from borings.

The Examiner of Coal Fields reports that there were thirty-seven collieries under inspection in 1879, as against thirty-three in 1878, and that the increased output of coal for the year is due to the extra quantities raised in the Southern and Western Districts.

The following table shows the annual output of each of the three districts during the past six years :—

in the Northern, Western, and Southern Districts.

1876.			1877.			1878.			1879.		
Tons.	Value.		Tons.	Value.		Tons.	Value.		Tons.	Value.	
1,062,531	£	s. d.	1,151,389	£	s. d.	1,241,036	£	s. d.	1,196,321	£	s. d.
	666,576	2 2		711,172	17 1		754,143	1 3		761,471	16 4
98,128	64,223	13 6	88,858	44,596	14 11	89,647	42,970	4 2	44,714	7,328	15 1
57,103	16,419	1 4	75,942	18,662	3 1	95,908	25,232	2 7	120,041	10 3	35,171 15 11
38,038	9,734	5 10	18,839	2,243	1 9	19,966	6,569	19 6	24,133	10 3	9,939 13 4
200,284	120,305	2 0	216,940	129,163	8 0	238,553	141,561	3 6	267,018	154,235	6 0
49,979	36,349	16 0	16,656	8,858	6 0	21,613	12,397	15 6	28,465	12,674	2 6

The following analyses of samples of coal have been made during the year 1879 by Mr. W. A. Dixon, F.C.S., F.I.C., Lecturer on Chemistry at the Sydney Mechanics School of Arts:—

COALS.

- No. 75.—A sample of the whole thickness of a 4-foot seam at Katoomba. It consisted of a mixture of a bituminous and splint coal with bright and dull coloured pieces.
Specific gravity, 1·343.

Analysis.							Analysis.
Volatile hydrocarbons	...	...	...	...	...	...	25·31
Fixed carbon	...	...	...	...	...	...	60·90
Ash	...	...	...	...	...	...	10·84
Sulphur	...	...	...	...	...	...	·24
Moisture	...	...	...	...	...	...	2·71
							<hr/> 100·00

The coke is dense, scarcely swollen, but fairly lustrous.

The ash is white.

This is a fairly good coal, the low percentage of sulphur being particularly noteworthy.

- No. 76.—A fairly bright and tolerably hard coal, from Katoomba, from 106 feet in the tunnel. Did not soil the fingers, and showed layers of "mother of coal" in places.
Specific gravity, 1·326.

Analysis.							Analysis.
Volatile hydrocarbons	...	...	...	...	...	...	25·82
Fixed carbon	...	...	...	...	...	...	61·34
Ash	...	...	...	...	...	...	9·26
Sulphur	...	...	...	...	...	...	·68
Moisture	...	...	...	...	...	...	2·90
							<hr/> 100·00

Coke.—70·60 per cent.; only slightly fritted together, dull coloured, with a few bright specks.

Ash.—A greyish white.

- No. 77. A rather dull-coloured coal, stained with ferric oxide, in some places iridescent. It was rather tender, and stained the fingers; fracture of the bright layers minutely choncooidal. From the Southern District.
Specific gravity, 1·307.

Analysis.							Analysis.
Volatile hydrocarbons	...	...	...	...	...	...	23·37
Fixed carbon	...	...	...	...	...	...	66·81
Ash	...	...	...	...	...	...	8·19
Sulphur	...	...	...	...	...	...	1·88
Moisture	...	...	...	...	...	...	·76
							<hr/> 100·00

Coke.—74 per cent.; bright and dense.

Ash.—Greyish.

- No. 78.—Kerbsene mineral from Joadja Creek Mine, near Berrima. This mineral resembles the Boghead mineral from Scotland, but is considerably lighter, having a specific gravity of 1·098 against 1·20. The yield of volatile hydrocarbons is much greater than from even picked specimens of Boghead, whilst the ash is only half as great as in that mineral.

Analysis.							Analysis.
Moisture	...	...	...	...	...	...	0·41
Volatile hydrocarbons	...	...	...	...	...	...	77·07
Fixed carbon	...	...	...	...	...	...	12·13
Ash	...	...	...	...	...	...	10·27
Sulphur	...	...	...	...	...	...	·12
							<hr/> 100·00

The coke was bright and lustrous.

The ash was white and voluminous.

From the high yield of volatile hydrocarbons this mineral should give an immense yield of oil or gas, according to the treatment to which it is subjected. The low specific gravity and small quantity of sulphur leads to the conclusion that the products would be of high illuminating power and easy of purification.

No. 79.—Coal from Lake Macquarie. Bright and semi-bituminous. In steaming power it would lie between the ordinary Newcastle coal and those of the Illawarra District.
Specific gravity, 1.340.

								Analysis.
Volatile hydrocarbons	...	...	...	...	...	...	...	31.93
Fixed carbon	...	...	...	...	...	...	...	54.66
Ash	...	...	...	...	...	...	...	8.82
Sulphur	...	...	...	...	...	...	...	.94
Moisture	...	...	...	...	...	...	...	3.65
								100.00

Coke.—63.48 per cent; dense, hard, and fairly bright.
The ash was white and loose.

The following analyses of coal are those of samples from the sections of seams exhibited at the Garden Palace. The sections were chipped from top to bottom, the bands only which are rejected in working the coal being omitted, so that the results show the average composition of the seams as worked. In some cases analyses have been made of samples of unknown history, from the same collieries, and I have placed these along with mine for comparison, and it will be observed that generally the amount of sulphur and ash is less in the samples from the whole thickness. Although these coals had been exposed to atmospheric and, to some extent, to weather action during the six months they seem to have altered very little, and show no signs of deterioration.

The first eight samples, Nos. 46 to 53, which are all from the Northern Coal-fields are very similar to one another in appearance, showing a bright laminated structure with traces of mineral charcoal, and they all yield bright, firm, hard cokes.

No. 46.—A. A. Company's Colliery, Newcastle.

Water	...	...	...	...	...	1.65	2.20
Volatile hydrocarbons	...	...	...	...	...	35.45	32.60
Fixed carbon	...	...	...	...	...	57.84	57.52
Ash	...	...	...	...	...	4.44	5.35
Sulphur	...	...	...	...	...	0.62	1.33
							100.00
							99.00
Specific gravity	...	...	...	...	...	1.286	1.297
Coke	...	...	...	...	...	63.28%	62.87%
Ash	...	...	...	...	...	Reddish.	White, heavy.

The second analysis is by Mr. Liversidge.

No. 47.—Coal from the Co-operative Mine, Plattsburg.

Water	...	...	...	...	...	...	2.45
Volatile hydrocarbons	...	...	...	...	...	...	34.38
Fixed carbon	...	...	...	...	...	...	58.24
Ash	...	...	...	...	...	...	4.20
Sulphur	...	...	...	...	...	...	.73
							100.00
Specific gravity	...	...	...	...	...	...	1.310
Coke	...	...	...	...	...	...	62.44%
Ash	...	...	...	...	...	...	Reddish.

No. 48.—Coal from the Ferndale Colliery, Tighe's Hill.

Water	...	...	...	...	...	...	2.10
Volatile hydrocarbons	...	...	...	...	...	...	36.22
Fixed carbon	...	...	...	...	...	...	57.24
Ash	...	...	...	...	...	...	3.84
Sulphur	...	...	...	...	...	...	.60
							100.00
Specific gravity	...	...	...	...	...	...	1.296
Coke	...	...	...	...	...	...	61.08%
Ash	...	...	...	...	...	...	Buff coloured.

No. 49.—Coal from New Lambton Mine.

[illegible]

No. 50.—Coal from Newcastle Wallsend Co.

Water	...	...	...	...	...	2.29	2.75
Volatile hydrocarbons	...	...	...	...	...	34.21	34.17
Fixed carbons	...	...	...	...	...	58.60	57.22
Ash	...	...	...	...	...	4.28	4.64
Sulphur	...	...	...	...	...	.62	1.22
						<hr/> 100.00	<hr/> 100.00
Specific gravity	...	...	...	...	...	1.347	1.333
Coke	...	...	...	...	...	62.88%	61.86%
Ash	...	...	...	...	...	Red.	White with red particles.

The second analysis is by Prof. Liversidge.

No. 51.—Coal from Newcastle Coal Co., Glebe, Newcastle.

[illegible]

No. 52.—Coal from the Waratah Coal Co.'s old tunnel at Waratah. This coal is, I understand, nearly worked out.

Water	2.45	2.21
Volatile hydrocarbons	38.16	36.70
Fixed carbons	54.12	55.82
Ash	4.64	4.15
Sulphur ... ..	.63	1.12
	<hr/> 100.00	<hr/> 100.00
Specific gravity	1.293	1.803
Coke	58.76%	59.97%
Ash	Buff colour.	Reddish.

The second analysis is by Prof. Liversidge.

No. 53.—Coal from Redhead Coal Co.'s 4,000 acres at Redhead.

Water	... ..	2·09
Volatile hydrocarbons	... ..	38·48
Fixed carbons	... ..	57·04
Ash	... ..	6·84
Sulphur	... ..	·55
		100·00
Specific gravity	... ..	1·325
Coke	... ..	68·88%
Ash	... ..	Grey coloured.

The five following coals, Nos. 54 to 57, and No. 62, are all from the Southern District. They are often called semi-bituminous, but would be more properly classed as free-burning bituminous, as although they do not cake together in the fire like the Northern coals, they may all be coked by the rapid application of heat in a closed vessel, and yield fairly bright dense coke.

No. 54.—Coal from Osborne Wallsend Colliery, Wollongong.

Water	...	...	...	...	...	...	...	...
Volatile hydrocarbons	...	...	...	...	...	...	...	...
Fixed carbon	...	...	...	...	...	...	...	...
Ash	...	...	...	...	...	...	...	...
Sulphur	...	...	...	...	...	...	...	...

100.00

Specific gravity	...	...	...	...	...	...	...	...
Coke	...	...	...	...	...	...	...	77-12%
Ash	...	...	...	...	...	...	...	Grey.

No. 55.—Coal from the Mount Pleasant Mine of the Illawarra Coal Company, Wollongong.

Water	...	...	...	...	...	...	...	70
Volatile hydrocarbons	...	...	...	...	...	...	...	22.04
Fixed carbon	...	...	...	...	...	...	...	68.08
Ash	...	...	...	...	...	...	...	8.76
Sulphur	...	...	...	...	...	...	...	.42

100.00

Specific gravity ...	...	...	...	...	...	...	...	1.854
Coke .....	...	...	...	...	...	...	...	76.84
Ash .....	...	...	...	...	...	...	...	Grey.

No. 56.—Coal from the Bulli Coal Company's Mine.

Water	...	...	...	...	...	65	103
Volatile hydrocarbons	...	...	...	...	...	21.85	23.65
Fixed carbon	...	...	...	...	...	65.68	61.61
Ash	...	...	...	...	...	11.28	13.17
Sulphur	...	...	...	...	...	.74	.54

100.00

100.00

Specific gravity ...	...	...	...	...	...	1.369	1.471
Coke ...	...	...	...	...	...	76.96%	74.78%
Ash ...	...	...	...	...	...	Grey.	Reddish v

Reddish white.

The second analysis is from a complete analysis by Dr. Percy, calculated into the same form as we use.

No. 62.—Coal from Coal Cliff Mine, near Bulli.

Water	...	...	...	...	...	...	...	...
Volatile hydrocarbons	...	...	...	...	...	...	...	18'22"
Fixed carbon	...	...	...	...	...	...	...	69'84"
Ash	...	...	...	...	...	...	...	10'80"
Sulphur	...	...	...	...	...	...	...	'28"

100.00

[illegible]

Greyish white

The coke from this sample was not very good, being rather tender.

No. 57.—Coal from J. J. O. Atkinson's mine, Berrima.

[illegible]

100.00

[illegible]

Greyish white

The following four samples, Nos. 58 to 61, are all from the Western District, and are not caking coals, and in my hands none of them yielded a true coke, but a shrunken mass, slightly sintered together. They can scarcely, in my opinion, be designated "splint," but are rather non-caking bituminous, a class which includes coals having a large relative proportion of oxygen, so that they do not coke, although they give a larger amount of volatile matter than others which do so. More of the volatile matter in their case consists of carbon monoxide than in the others; and although some of this class will yield a coke when fresh from the mine, they soon lose this property by exposure.

No. 58.—Coal from Lithgow Valley Colliery.

Water	...	...	...	...	...	2.24	1.95
Volatile hydrocarbons	...	...	...	...	...	28.48	34.18
Fixed carbon	...	...	...	...	...	58.80	52.34
Ash	...	...	...	...	...	9.68	10.12
Sulphur	...	...	...	...	...	.80	1.41
						100.00	100.00
Specific gravity	...	...	...	...	...	1.340	2.329
Ash	...	...	...	...	...	Greyish white.	White.

The second analysis is by Professor Liversidge, who found that the coal coked. He had probably a fresh sample, and found more volatile matter, which bears out my observation above.

No. 59.—Coal from Eskbank Colliery, Lithgow Valley.

Water	...	...	...	...	...	2.70	2.00
Volatile hydrocarbons	...	...	...	...	...	28.78	33.55
Fixed carbon	...	...	...	...	...	57.88	49.97
Ash	...	...	...	...	...	9.88	12.91
Sulphur	...	...	...	...	...	.76	1.57
						100.00	100.00
Specific gravity	...	...	...	...	...	1.329	1.335
Ash	...	...	...	...	...	Grey.	Brilliant white.

The second analysis is by Professor Liversidge, who reports coke fair, but rather tender; the sample therefore probably not so fresh as in the last.

No. 60.—Coal from the Vale of Clwydd Colliery.

Water	...	...	...	...	...	2.15	2.10
Volatile hydrocarbons	...	...	...	...	...	35.02	33.35
Fixed carbon	...	...	...	...	...	52.36	53.38
Ash	...	...	...	...	...	9.72	9.80
Sulphur	...	...	...	...	...	.75	1.37
						100.00	100.00
Specific gravity	...	...	...	...	...	1.328	1.323
Ash	...	...	...	...	...	Grey.	Feeble grey.

The second analysis is by Professor Liversidge, who reports the coke hard, compact, and fairly lustrous; a repetition of the determination of volatile matter on my sample gave concordant results.

No. 61.—Coal from Katoomba Coal Company.

Water	...	...	...	...	...	2.25	2.90
Volatile hydrocarbons	...	...	...	...	...	26.28	25.82
Fixed carbon	...	...	...	...	...	60.84	61.34
Ash	...	...	...	...	...	10.04	9.26
Sulphur	...	...	...	...	...	.59	.68
						100.00	100.00
Specific gravity	...	...	...	...	...	1.400	1.326
Ash	...	...	...	...	...	Greyish white.	Greyish white.

Both these analyses are by myself, from different samples; in the second, which came direct from the mine, I found it yielded a soft, dull coke, whilst the first gave only a scarcely coherent powder. This coal has a very poor appearance, very hard, and much stained with oxide of iron. The analysis however shows it to be a better coal than its appearance indicates.

The following table contains analyses of samples of coal made by Mr. Dixon in 1878:—

TABULAR VIEW OF THE PERCENTAGE COMPOSITION OF COALS.

No	Name of Colliery.	Moisture.	Volatile Hydrocarbons.	Fixed Carbon.	Ash.	Sulphur.	Sp. gr.	Coke.
68	Berrima	1'90	21'17	56'67	18'25	1'01	1'37	75'92
69	"	1'21	19'95	41'30	36'56	0'98	1'56	77'86
70	"	1'26	15'61	48'34	33'92	0'87	1'51	82'26
71	Teralba, near Newcastle	4'65	32'84	52'68	8'16	1'67	1'35	60'84
72	"	3'81	30'22	54'44	8'52	3'01	1'29	62'96
73	Minmi, near Newcastle	2'59	33'87	56'49	5'61	1'44	1'28	62'10
74	Mittagong	2'91	8'92	62'24	24'74	1'19	1'486	.....
75	Near Jordan's Crossing	2'36	28'27	51'66	15'86	1'85	1'401	67'52
76	Wingecarabee River, near Berrima	1'41	30'20	53'15	13'46	1'78	1'355	66'61

No. 68 had a laminated structure with bright layers, and was rather tender, breaking easily in small pieces. The coke was much swollen up, soft, and black coloured, with a few bright specks. The ash was greyish white, but from its large amount this coal would only be of value for local purposes.

No. 69. Bituminous. Rather dull, with very thin bright layers, along which it split readily; yielded a brown powder; coke much swollen up and fairly lustrous and hard; ash white, but so large in quantity as to render the coal of little value.

No. 70. Dull coloured, bright layers entirely absent, gave a dark brown powder, darker than No. 69. The coke was not much swollen, black coloured and friable; ash white. The same remark applies, however, to this coal as to No. 69.

No. 71 Semi-bituminous. Bright, with small conchoidal fracture, stained with oxide of iron; coke scarcely swollen, fairly bright, with small silvery excrecences, showed distinct prismatic fracture; ash reddish and somewhat fusible.

No. 72. Bituminous, generally bright, with a few narrow dull layers; coke bright and lustrous, very little swollen, dense, splits readily; ash grey, not easily fusible.

No. 73. Bituminous, bright, with a few narrow dull streaks; coke bright, dense, with fused appearance, little swollen; ash reddish, somewhat fusible. From new seam at Mittagong.

No. 74. Contained dull and bright layers in about equal proportions; slightly soils the fingers. The bright lines of fracture were marked by numerous lense-shaped cavities 0'05 to 0'1 inch in greater diameter, generally filled with a brownish pulverulent carbonaceous matter. These were apparently the impressions and remains of seeds, and they showed traces of a dense cortical layer. The brown matter on heating glowed, emitted a smoky odour, and burned away completely. This coal did not produce a true coke, a loose incoherent black powder being left. Ash greyish white, but much too large in amount.

No. 75. Bituminous, rather dull and somewhat brittle. The piece sent had a bright band running through the middle, and this band was very tender, breaking with slight pressure into rectangular fragments. Coke dense, hard, not much swollen, and having a silvery lustre; ash, pure white, aluminous.

No. 76. A hard bituminous coal, generally bright, but with reddish incrustation, the bright pieces breaking with decided conchoidal fracture; coke hard, slightly swollen, and fairly lustrous; ash white.

The following tables, compiled by Professor Liversidge, show the percentage composition of coals in the Northern, Western, and Southern Districts, respectively:—

TABULAR VIEW OF THE PERCENTAGE COMPOSITION.

Northern District Coal-field.

I.

No.	Name of Colliery.	Moisture.	Volatile Hydrocarbons.	Fixed Carbon.	Ash.	Sulphur.	Sp. gr.	Coke.
4	Russell's	1'84	44'09	49'95	2'70	1'41	1'274	52'65
5	Greta	2'25	39'21	54'41	2'72	1'41	1'287	57'13
1	Waratah	2'21	36'70	55'82	4'15	1'12	1'303	59'97
6	Wallsend	2'75	34'17	57'22	4'64	1'22	1'333	61'86
7	A. A. Co.'s Mine, Newcastle ...	2'20	32'60	57'52	5'35	1'33	1'297	62'87
3	Anvil Creek	1'74	41'10	47'90	7'80	1'46	1'323	55'70

The coals in the above table are arranged in order according to the amount of ash present—the first of the series containing the smallest and the last the largest weight of ash. With the exception of the specimen from Anvil Creek, it will be noticed that the portion of fixed carbon increases with the increase in the amount of ash. The proportions of volatile hydrocarbons naturally undergo a corresponding diminution.

Speaking generally, the coals which yield a large percentage of volatile hydrocarbons may be said to be the best adapted for the manufacture of gas.

It will also be at once apparent that the sp. gr. in most of the above cases affords a very good indication of the quality of the coal. As a general rule, ordinary coals, which possess a high specific gravity, yield a large proportion of ash.

TABULAR VIEW OF THE PERCENTAGE COMPOSITION.

Western District.

II.

No.	Name of Colliery.	Moisture.	Volatile Hydrocarbons.	Fixed Carbon.	Ash.	Sulphur.	Sp. gr.	Coke.
10	Vale of Clwydd.....	2'10	33'35	53'38	9'80	1'37	1'323	63'18
11	Lithgow Valley	1'95	34'18	52'34	10'12	1'41	1'329	62'46
9	Bowenfels	2'36	28'35	56'54	11'40	1'35	1'399	None.
8	Eskbank	2'00	33'55	49'97	12'91	1'57	1'355	63'18

It is noticeable that the quantity of ash yielded by the Western coals is much greater than is yielded by the Northern ones; also, that the specific gravity is in certain cases much higher.

The ash in all cases was white and dense, whereas many of the Northern coals yield ashes of a buff or red tint, and often quite loose and flocculent.

It is a common opinion amongst the non-scientific that the relative amounts of sulphur present in coals can be approximately estimated by the redness of the ash—on the supposition that the whole of the sulphur exists in the coal in the form of iron pyrites—but such is not the case. On referring to the analysis of the Northern Districts coal, it will be seen that some of the coals which left pure white coloured ashes contained the largest amount of sulphur, and that others which left red ashes contained the smallest quantity of sulphur.

Sulphur may be present in coals in various forms—either in combination with iron as pyrites, which is the most common form of all, as sulphuric acid in combination with the inorganic constituents of the coal, such as alumina, lime, magnesia, or potash; or again, it may exist in the form of organic compounds.

TABULAR VIEW OF THE PERCENTAGE COMPOSITION.

Southern District.

III.

No.	Name of Colliery.	Moisture.	Volatile Hydrocarbons.	Fixed Carbon.	Ash.	Sulphur.	Sp. gr.	Coke.
13	Mount Keira	1'15	23'51	64'65	9'70	'99	1'379	75'35
14	Berrima	1'70	32'78	53'84	10'40	1'28	1'364	64'24
12	Mount Kembla	1'50	19'74	67'18	10'72	'86	1'363	Non-coking.
15	Dymock's, Jamberoo	1'50	20'22	56'56	20'70	1'02	1'456	Non-coking.

The specific gravities of these coals do not in all cases bear that same close relation to the amount of ash which was seen in the case of the coals from the Northern Districts.

In order that an opinion may be formed with regard to the coals of New South Wales it will perhaps not be amiss to compare them with some of those produced in various parts of Great Britain.

In the first place, the proportion of ash in a coal is a matter of the greatest importance, the value of coal as a fuel depends to a great extent upon the smallness of the quantity of non-combustible matter which it contains; if the amount be very large the coal will be perfectly worthless. Neither must the quality or chemical composition of the ash be neglected, for if the ashes be easily fusible, as they usually are when a large quantity of iron is present, they tend to "clinker-up" the grate, and thus cause great waste of heat and the expenditure of much extra time and labour in stoking.

SHALE.

TABLE showing the quantity and value of Kerosene Shale produced during the years 1865 to 1879.

Year.	Quantity.	Average Price per Ton.	Total Value.
	Tons.	£ s. d.	£ s. d.
1865	570	4 2 5'47	2,350 0 0
1866	2,770	2 18 10'48	8,154 0 0
1867	4,079	3 14 9'21	15,249 0 0
1868	16,952	2 17 7'11	48,816 0 0
1869	7,500	2 10 0'00	18,750 0 0
1870	8,580	3 4 3'18	27,570 0 0
1871	14,700	2 6 3'91	34,050 0 0
1872	11,040	2 11 11'91	28,700 0 0
1873	17,850	2 16 6'55	50,475 0 0
1874	12,100	2 5 1'48	27,300 0 0
1875	6,197	2 10 2'22	15,500 0 0
1876	15,998	3 0 0'00	47,994 0 0
1877	18,963	2 9 0'81	46,524 0 0
1878	24,371	2 6 11'40	57,211 0 0
1879	32,519	2 1 1'96	66,930 10 0
	194,189	2 11 0'48	495,573 10 0

From the above table it will be seen that this branch of mining is progressing satisfactorily, the output for 1879 exceeding that of 1878 in quantity by 8,148 tons, and in value by £9,719 10s., and being largely in excess of any previous year. Nevertheless, the average price per ton is lower than in any previous year.

There are two kerosene shale mines at work at present, namely, the New South Wales Shale and Oil Company's Mine, at Hartley, on the Blue Mountains, and the Joadja Creek Mine, in the Berrima District, about 16 miles from Mittagong.

The operations carried on by the New South Wales Shale and Oil Company consist of the mining of kerosene shale, or, as it is more properly called, torbanite, or Hartley Boghead mineral, and the manufacture of kerosene oil, and other products derivable therefrom.

The mining property, embracing an area of over 3,000 acres of purchased land, is situated in one of the most picturesque spots of the district of Hartley. A tramway about 2 miles in length connects the mines with the Hartley Vale platform or siding, on the Great Western Railway, at a distance of 80 miles from Sydney, and about 3½ miles from Mount Victoria, which is one of the favourite resorts of excursionists and tourists from Sydney, both on account of its bracing atmosphere and the magnificent scenery by which it is everywhere surrounded. The tramway extends from the railway siding for a distance of about 1½ mile on the top of the mountains; it then passes down a steep declivity, known as "The Incline," for nearly 900 yards, to the valley below, terminating at "the tip," where the skips run out from the mines are weighed, and, by a simple mechanical contrivance, emptied into larger skips or trucks, which traverse the entire length of the tramway. "The Incline" is worked by a stationary engine. A steel rope attached to the truck at "the tip," extending along the tramway to the top of the incline, where it passes round a large pulley, and returning down the hill on pulleys supported by high posts, is wound round a large drum; the trucks, loaded

with shale, are thus taken up one at a time with great speed. The level portion of the tramway is worked by a small locomotive, which takes about six full trucks from the top of the incline to the railway siding, where their contents are placed in the ordinary railway trucks and forwarded to Sydney.

The mineral is found in large quantities on the Company's property, and although mining operations have been carried on for upwards of twelve years there is at the present time a much larger quantity revealed to sight than at any previous time during their operations, so much so that for all practical purposes the supply may be said to be inexhaustible. The thickest portion of the seam measures 5 feet 8 inches, while the average thickness of the workings is about 3 feet 6 inches. The large extent in which this mineral abounds at Hartley Vale does not detract from its quality; on the contrary, its richness is quite as great in the very thickest portions of the seam and throughout.

There is a township on the property called Hartley Vale, which has been properly laid out in streets not many months ago, and already the alignments are becoming visible by the neat-looking tenements with galvanized iron roofs which are making their appearance. The population of Hartley Vale numbers about 600 souls, all directly connected with the mining industry of the Company. About one-half of the population is employed in the mines and the various occupations connected therewith on the spot. Besides the mining operations of this Company they have of late added the manufacture of crude oil. Up to the present time the latter has been to some extent experimental, but it is now intended to increase the production of crude oil at the mines to a much larger extent, which will necessitate arrangements on a large scale for the transit of the raw material by railway and otherwise to the refining works at Alexandria, on the Botany Road, near Sydney.

The oil works are situated at a distance of upwards of 3 miles from Sydney, in the suburb above mentioned.

They consist first of two long rows of retorts in brickwork, numbering altogether 100, each of which is capable of containing upwards of one ton at a charge. These retorts discharge their crude oil into pipes connecting with large receiving tanks, which also are connected by pumps with the refinery—a large brick building in which the process of treating is carried on. There are also a row of stills in brickwork used for refining the oil, which are fed from large iron tanks situated on an adjacent hill, from which the oil flows by gravitation. Lastly, as the ultimate receptacle, there are two large stock tanks, of a total capacity of some 60,000 gallons, into which the oil, after it has passed through the various processes of refinement, is pumped, where it remains until packed into tins and cases for despatch into consumption.

There are also a fire-proof brick store and filling sheds, adjoining the stock tanks, to which is attached the tin-can manufactory, where the tins for containing the oil are made with great rapidity by means of machinery imported from America for that purpose. A large open shed, containing timber cut up into the proper sizes for making cases to hold two tins each, completes the buildings on the oil works.

The shale yields on an average about 150 gallons of crude oil per ton, which contains over 60 per cent. of refined kerosene, which is placed on the market as "Comet Oil," and the remaining products consist of gasoline, benzine, spongoline, paraffin, wood-preserving composition, and lubricating oil.

Its gas-producing capabilities amount to the large yield of over 18,000 cubic feet of gas, with an illuminating power of thirty-eight to forty candles. In gas-making, however, gas-engines are enabled to increase the volume of gas by decreasing the illuminating power, and *vice versa*.

The number of hands employed at the oil works is about forty. The total number of persons indirectly employed by the Company, both in mining and manufacturing operations, is greatly in excess of that herein stated.

The Joadja Creek Mine has an area of over 1,800 acres, where about 50 miners are usually employed. The lower seam of shale in this mine is from 10 to 14 inches thick, and the upper seam is from 7 to 10 inches thick, from which some 850 tons of shale is raised weekly. In close proximity to the mine are the works for extracting and purifying the oil, and buildings for making tins and cases for packing the oil for market. For the purpose of extracting the oil the shale is placed in the retorts and distilled at a low temperature, the oil passing by gravitation from the retorts to the purifying works. It is there received into a tank, and sulphuric acid is added to it, the effect of which is to bring off a black viscid tar, and thereby purify the oil. The oil is subjected to a second and third distillation, in which a solution of caustic soda is employed. The time occupied in the extraction and purification of the oil is usually one month. The number of men usually employed about the mine and works is about 150, and a number of horses and bullocks is also employed. The following is given as the produce of 100 tons of kerosene shale:—10,000 gallons of crude oil, or 5,000 gallons of good burning oil; 3 to 5 per cent of gasoline at 670 degrees; $1\frac{1}{2}$ to 2 per cent. of paraffin; 6 per cent. of tar; and 10 to 15 per cent. of lubricating oil.

Kerosene shale occurs in the coal measures in several other localities. "It has unquestionably resulted," says the late Rev. W. B. Clarke, "from the local deposition of some resinous wood, and passes generally into ordinary coal, many portions of the same bed in the Illawarra mines exhibiting the impress of fronds of *Glossopteris* as plainly as they are shown on ordinary coal shale." . . . "Presuming that the origin above suggested is correct, viz., the occasional occurrence in the ancient deposits of trees of a peculiar resinous constitution, there is no anomaly in finding in one spot a mere patch amidst a coal seam (as in the case of Anvil Creek, on the Hunter River), or thick-bedded masses of greater area, as in the coal seams of Mount York, or of America Creek, in the Illawarra, depending on the original amount of drift timber."

It may also partly have resulted from the spores of lycopodiaceous plants, for some of the plants in the shale consist of coal. For instance, in the shale from Joadja Creek are stems of *vertebraria*, forming ordinary coal, embedded in a position perpendicular to the stratification of the shale, thus showing that the hydro-carbonaceous material forming the shale must have been deposited around the *vertebraria* plant stem whilst the latter was standing erect, and probably during its growth.

TIN.

Our stanniferous deposits cover about 5,440,000 acres, and comprise both lode and stream tin.

The former, though very rich, have not yet been worked to any extent; but since our tin-fields were opened, in 1872, some large patches of stream tin have been extensively worked.

The low prices of tin lately ruling had the effect of causing many of our tin-mines to suspend operations, but since the market has improved work has been resumed in most of the old mines, and numerous new ones have been opened. Should the rise in the price of tin be maintained, there can be little doubt that the tin-fields will provide profitable employment for both labour and capital for a very long time to come.

Recent discoveries of comparatively deep deposits of stream tin prove how little our tin-bearing lands have been explored, and how richly they compensate the explorers.

As a rule the deposits of stream tin hitherto opened could be worked by operative miners, without the aid of expensive plant; but in most cases, where the works were carried on upon an extensive scale, involving an outlay of capital, the owners of the mines provided the plant, &c., and the work, *i.e.*, raising, crushing, and dressing the ore, was done by operative miners, under a system of tribute or piece-work, the owners paying the miners a certain price per ton for the ore won.

Ordinarily the miner does not under this management make more than good wages, but he always has a chance of doing something better. As an instance: Two men who are working a mine in the Vegetable Creek District on tribute divided (after paying all working expenses) as the result of their work during the month of September the sum of £900 between them, *i.e.*, each earned clear of all expenses £450 for his month's work.

The Warden at Glen Innes reports a steady and well sustained improvement in the district under his charge, and the deep deposits under the basalt give promise of permanency. From the local smelting works at Tent Hill, 582 tons 1 cwt. 26 lbs. of refined tin were sent to England.

During 1879 the quantity of ore raised exceeds the output of 1878 by 979 tons.

The Warden at Inverell reports that during the first part of the year, in the state of the tin-fields under his charge, but later on, when a supply of water was obtained, an improvement was visible, but as soon as the rise in the price of tin was made known in the district the improvement was marked. A permanent supply of water is much needed.

The Warden at Tenterfield reports that the tin-fields in his district have been very dull during the greater part of the year, but the rise in the price of tin has given an impetus to tin-mining, and abandoned ground is now being taken up again. Some good finds have recently been made in the banks of some of the creeks that were formerly worked.

The Mining Registrar at Vegetable Creek (whose report annexed is worthy of perusal) states that the prospects on that field are highly satisfactory. Numerous discoveries of stream tin under the basalt, at greater or less depths, have been made during the year. In many cases

the leads or ancient watercourses appear to be of great extent, and contain rich deposits of tin. Nearly all the mines are now worked on tribute, and that system of working appears to be satisfactory. It should (says the Mining Registrar) be so to the owners of the land, seeing the local price of stream tin is said to be £51 per ton, and the price paid to the tributors does not exceed £31. According to the statement furnished by Mr. Gower, 13,568 tons 18 cwt. of ore have been obtained from the shallow deposits on that field; and 3,723 tons from deep leads from 1872 to 1879. Numerous lodes have been discovered, some apparently rich, but they are not being worked at present.

The Mining Registrar at Tingha says the decrease in the output of tin is mainly due to the low price of tin during the greater part of the year. Since the improvement in the tin, market the population has increased, and some progress has been made. He states that there is a large extent of country which, at the present price of tin, will yield good wages to working men, and much of this land can be worked with the aid of the rudest appliances. The deep deposits in the district are not being developed for want of capital, though there is a prospect of one of the numerous lodes being opened up shortly.

The following table shows the quantity of tin ore and tin exported each year since 1872, amounting in the aggregate to 12,920 tons 15 cwt. of ore, and 34,988 tons 2 cwt. of tin, valued together at £3,144,237.

TABLE showing the quantity and value of Tin exported from, and the produce of the Colony of New South Wales, since the opening of the Tin-fields in 1872.

Year.	Ingots.		Ore.		Total.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Tons. cwt.	£ s. d.	Tons. cwt.	£ s. d.	Tons. cwt.	£ s. d.
1872	47 0	6,482 0 0	849 0	41,337 0 0	896 0	47,819 0 0
1873	911 0	107,795 0 0	3,660 0	226,641 0 0	4,571 0	334,436 0 0
1874	4,101 0	366,189 0 0	2,118 0	118,133 0 0	6,219 0	484,322 0 0
1875	6,058 0	475,168 0 0	2,022 0	86,143 0 0	8,080 0	561,311 0 0
1876	5,449 0	379,318 0 0	1,509 0	60,320 0 0	6,958 0	439,638 0 0
1877	7,230 0	477,952 0 0	124 0	30,588 0 0	8,054 0	508,540 0 0
1878	6,085 0	362,072 0 0	1,125 0	33,750 0 0	7,210 0	395,822 0 0
1879	5,107 2	343,075 0 0	813 15	29,274 0 0	5,920 17	372,349 0 0
Total	34,988 2	2,518,051 0 0	12,920 15	626,186 0 0	47,908 17	3,144,237 0 0

It will be seen that the quantity of ore exported in 1879 is less than in any previous year, showing that we are gradually ceasing to export ore now that it can be smelted in the Colony; so far the result is satisfactory, but the total export shows a decrease upon 1878, equal in quantity to 1,289 tons 3 cwt., and in value to £23,473. Should the present price of tin be maintained, there can be little doubt that our output for 1880 will far exceed that of 1879.

COPPER.

THE cupriferous deposits are very extensive, covering an area of 6,713 square miles, but though in places they have been worked more or less since 1858, only a few mines have been extensively worked. This is due in a great measure to want of facilities for sending the ore to market or to the smelting works, or to the want of capital to erect such works upon the mine. The low price of metal lately has had a depressing effect upon this branch of mining, but notwithstanding that fact the output of 1878 exceeded that of any previous year. The recent rise in the price of copper has already had a marked effect upon the value of our copper mines, and if it be maintained there can be little doubt that numerous new mines will be opened, and our output largely increased.

Our lodes, as a rule, are moderately large, and the bulk of the ores tested yield a high per centage of copper, presenting an opening for the profitable investment of capital, the extent of which may be estimated from the fact that most of the lodes which have been explored will yield a slight profit when fine copper is worth in Sydney only about £50 per ton, whereas it is now worth from £60 to £65 per ton.

TABLE showing the quantity and value of Copper, the produce of the Colony, exported from the Colony of New South Wales, from 1858, to 1879.

Year.	Ingots.		Ore and Regulus.		Total.	
	Quantity.	Value.	Quantity.	Value	Quantity.	Value.
	Tons cwt.	£	Tons cwt.	£	Tons cwt.	£
1858	.....	.....	58 o	1,400	58 o	1,400
1859	30 o	578	.....	.....	30 o	578
1860	.....	.....	43 o	1,535	43 o	1,535
1861	.....	.....	144 o	3,390	144 o	3,390
1862	.....	.....	213 o	5,742	213 o	5,742
1863	23 o	1,680	114 o	420	137 o	2,100
1864	54 o	5,230	.....	.....	54 o	5,230
1865	247 o	15,820	22 o	545	269 o	16,365
1866	255 o	18,905	23 o	1,885	278 o	20,790
1867	393 o	30,189	o 2	5	393 o	30,194
1868	644 o	23,297	172 o	4,000	816 o	27,297
1869	1,980 o	74,605	104 o	2,070	2,084 o	76,675
1870	994 o	65,671	6 o	60	1,000 o	65,731
1871	1,350 o	87,579	94 o	1,297	1,444 o	88,876
1872	1,035 o	92,736	417 o	13,152	1,452 o	105,888
1873	2,795 o	237,412	51...o	1,690	2,846 o	239,102
1874	3,638 o	311,519	522 o	13,621	4,160 o	325,140
1875	3,520 o	297,334	157 o	4,356	3,677 o	301,690
1876	3,106 o	243,142	169 o	6,836	3,275 o	249,978
1877	4,153 o	307,181	360 o	17,045	4,513 o	324,226
1878	4,983 o	337,409	236 o	7,749	5,219 o	345,158
1879	4,106 15	256,437	36 7	915	4,143 2	257,352
Total...	33,306 15	2,406,724	2,941 9	87,713	36,248 2	2,494,437

From the above it will be seen that up to the end of 1879 we had exported copper and copper ore to the value of £2,494,437. Our export for 1879 is less than that of 1878 by 1,076 tons. This may be accounted for by the fact that during 1879 copper reached, according to the Mining Journal, the lowest prices on record. There is now evidence of an improvement in this branch of mining, and if present prices be maintained many mines that were closed will be opened again during 1880.

The following analyses have been made during 1879 by Mr. W. A. Dixon, F.C.S., F.I.C.:—

COPPER ORES.

- No. 56. From near Parkes, chiefly green carbonate, with a little copper pyrites, contained—Copper, 27·04 per cent.
 No. 57. Grey sulphide of copper, with a little blue carbonate, from the Milburn Creek Mine, contained—Copper, 45·91 per cent.; specific gravity, 4·270.
 No. 58. Copper and iron pyrites and peacock ore, from the Milburn Creek Mine, contained—Copper, 16·76 per cent.; specific gravity, 4·240.
 No. 59. Copper glance tarnished with green carbonate, from Millburn Creek Mine, contained—Copper, 27·94 per cent.; specific gravity, 4·284.
 No. 60. Drainage water from the Millburn Creek Mine, contained—Copper, 328·9 gra. per gallon, equal to 4·698 lbs. per 100 gallons. Specific gravity, 1·031.
 This water contained a considerable quantity of sulphate of iron in solution, but contained no free acid.
 Porphyry rock, containing native copper, blue and green carbonate and silicate of copper (crysocolla), from Parkes, contained—

Native copper	...	...	...	...	...	...	...	77 per cent.
Combined	...	...	...	...	...	...	...	82 "
Total	...	...	...	...	...	...	...	1·59

There was much variation in the different pieces composing the large sample submitted to me, some being tolerably rich. The whole was crushed to obtain a uniform sample. The rock also contains a small quantity of lead, and hence may possibly contain silver also.

- No. 62. A sample of nearly pure copper and iron pyrites from the Mudgee District, contained—Copper, 21·26 per cent.; gold, 2 oss. 12 dwts. 5 gra. per ton; Silver, 2 oss. 11 dwts., per ton.
 No. 63. Quartz with galena, blue and green carbonates of copper, and copper pyrites, from Tingha, contained—Copper, 6·96 per cent.; silver, 2 oss. 18 dwts., per ton; gold, 5 gra. per ton.

PERCENTAGE COMPOSITION OF COPPER ORES—TABULAR VIEW.

Oxidised Ores.

No.	Locality.	Description.	Per centage of Copper.	Silver.	Gold.
				oss. dwts. gra.	oss. dwts. gra.
26	New Wellington	Red oxide	14·26	.....	.....
38	Bingera	"	19·94	1 2 5	traces
41	Clarence River	"	22·67	.....	.....
35	Apsley, Bathurst	"	22·82	.....	.....
33	Mitchell's Creek	"	25·79	1 11 7	14 10 6
36	Peelwood, Tuena	"	49·27	4 4 22	traces
32	Mitchell's Creek	Green carbonate ...	9·48	9 9 19	4 10 18
31	"	"	12·57	13 13 6	1 2 20
28	Three-mile Flat, Wellington ...	"	13·15	8 3 8	traces
20	Wiseman's Creek	"	16·72	7 19 17	traces
23	South Wiseman's Creek	"	27·06	21 19 16	traces

Pyritic Copper Ores.

42	Clarence River	Pyrites	3·07	2 15 12	traces
27	Kadumbe Range, Wellington	Mixed sulphides ...	8·98	3 18 9	traces
21	Wiseman's Creek	Pyrites	9·30	.....	.....
22	"	"	11·30	.....	.....
24	South Wiseman's Creek	"	12·78	6 17 4	traces
25	Wellbank, Wellington	Mixed sulphides ...	13·39	.....	.....
34	Apsley, Bathurst	Pyrites	18·72	10 6 10	traces
37	Peelwood, Tuena	"	21·38	12 11 14	traces
29	Cargo	Mixed ore	23·16	25 12 20	traces
39	Bingera, New England	Pyrites	23·71	.....	.....
40	Clarence River	"	24·19	.....	.....
30	Ophir Copper Company	"	27·49	6 0 20	traces

Copper ores from the Cobar Mine, the samples being taken from the different lodes worked.

No. 56.—*Copper Pyrites and Magnetite.*

Silica	...	...	...	...	...	...	...	4.26
Copper	...	...	...	...	...	...	...	22.84
Antimony	...	...	...	...	...	...	...	.61
Bismuth	...	...	...	...	...	...	...	2.11
Lead	...	...	...	...	...	...	...	.27
Arsenic	...	...	...	...	...	...	...	traces
Iron	...	...	...	...	...	...	...	39.20
Zinc	...	...	...	...	...	...	...	.35
Silver	...	...	...	...	...	...	...	traces
Sulphur	...	...	...	...	...	...	...	24.11
Oxygen, water, loss and undetermined	...	...	...	...	...	...	...	6.25
								100.00

Calculated into proximate constituents these results give—

Silica	4.26	Copper pyrites 66.04
Cuprous sulphide	...	...	...	...	...	...	...	28.60
Ferric sulphide	...	...	...	...	...	...	...	37.44
Antimony "	...	...	...	...	...	...	...	.85
Bismuth "	...	...	...	...	...	...	...	2.59
Lead "	...	...	...	...	...	...	...	.31
Zinc "	...	...	...	...	...	...	...	.52
Ferrous ferric oxide	24.50	
Traces arsenic, silver, water, and loss93	
								100.00	

The copper pyrites was bright and distinct, interspersed with the magnetite, which remained on treating the mineral with nitric acid.

No. 57.—*Mixture of Red Oxide of Copper, Copper Glance, and Ferric Oxide.*

Silica	...	...	...	...	...	...	...	2.06
Copper	...	...	...	...	...	...	...	54.06
Antimony	...	...	...	...	...	...	...	traces
Bismuth	...	...	...	...	...	...	...	1.47
Lead	...	...	...	...	...	...	...	.41
Iron	...	...	...	...	...	...	...	7.28
Nickel	...	...	...	...	...	...	...	traces
Magnesium	...	...	...	...	...	...	...	5.33
Silver	...	...	...	...	...	...	...	traces
Sulphur	...	...	...	...	...	...	...	4.18
Carbonic acid	...	...	...	...	...	...	...	99.7
Water	...	...	...	...	...	...	...	3.41
Oxygen, loss, and undetermined	...	...	...	...	...	...	...	11.83
								100.00

Calculated into its proximate constituents from these results, this ore gives:—

Silica	...	...	...	...	...	...	...	2.06
Cuprous sulphide	...	...	...	...	...	...	...	20.77
Cuprous oxide	...	...	...	...	...	...	...	42.03
Lead "	...	...	...	...	...	...	...	.44
Bismuth "	...	...	...	...	...	...	...	1.64
Ferric "	...	...	...	...	...	...	...	10.40
Magnesium carbonate	...	...	...	...	...	...	...	19.03
Water	...	...	...	...	...	...	...	3.41
Loss and traces of substances undetermined	...	...	...	...	...	...	...	.22
								100.00

Ferric oxide was left undissolved on treating with nitric acid.

No. 61.—Copper Glance and Red Oxide.

Silica	...	...	...	...	...	...	...	...	20·68
Copper	...	...	...	...	...	...	...	...	68·24
Antimony	...	...	...	...	...	...	...	...	·18
Bismuth	...	...	...	...	...	...	...	...	1·18
Iron	...	...	...	...	...	...	...	...	1·74
Sulphur	...	...	...	...	...	...	...	...	5·70
Carbonic acid	...	...	...	...	...	...	...	...	traces.
Oxygen and loss	...	...	...	...	...	...	...	...	7·38
									100·00

These numbers give for the proximate constituents—

Silica	...	...	...	...	...	...	...	...
Cuprous sulphide	...	...	...	...	...	...	...	20.68
Cuprous oxide	...	...	...	...	...	...	...	28.52
Antimony "	...	...	...	...	...	...	...	46.62
Bismuth "	...	...	...	...	...	...	...	.16
Ferric "	...	...	...	...	...	...	...	1.82
Traces carbonic acid, water, and loss	...	...	...	...	...	...	...	2.48
								<hr/> 22
								100.00

No. 62.—*Copper Glance, with veins of Malachite running through it.*

Silica	...	...	...	...	...	...	...	...	56
Copper	...	...	...	...	...	...	...	...	57·42
Antimony	...	...	...	...	...	...	...	...	traces.
Bismuth	...	...	...	...	...	...	...	...	96
Lead	...	...	...	...	...	...	...	...	7·79
Magnesium	...	...	...	...	...	...	...	...	traces.
Iron	...	...	...	...	...	...	...	...	4·99
Sulphur	...	...	...	...	...	...	...	...	11·67
Carbonic acid	...	...	...	...	...	...	...	...	5·87
Water	...	...	...	...	...	...	...	...	4·60
Oxygen and loss	...	...	...	...	...	...	...	...	6·16
									100·00

The proximate constituents calculated from these numbers are:—

Silica	... ..	..
Cuprous sulphide	... ..	50-89
Copper, hydrated carbonate, malachite ($\text{CuO}_2\cdot\text{CO}_2\cdot\text{Aq.}$)	... ..	31-88
Bismuth sulphide	... ..	1-46
Lead "	... ..	8-97
Ferric oxide	... ..	7-18
		100-88

No. 63.—*Green Carbonate of Copper with Ferric Oxide.*

Silica	...	...	...	...	...	...	...	10.64
Copper	...	...	...	...	...	...	...	42.79
Bismuth	...	...	...	...	...	...	...	1.24
Iron	...	...	...	...	...	...	...	8.49
Carbonic acid	...	...	...	...	...	...	...	14.37
Water	...	...	...	...	...	...	...	7.04
Oxygen and loss	...	...	...	...	...	...	...	15.49
								100.00

These numbers give for the proximate constituents :—

Silica	...	...	...	...	...	...	...	...	10.64
Hydrated carbonate of Copper	}	...	...	...	...	...	...	...	74.48
Malachite ($\text{CuO}_2\text{CO}_2\text{Aq.}$)		...	...	...	...	...	...	...
Oxide of bismuth	...	...	...	...	...	...	...	...	1.38
Ferric oxide	...	...	...	...	...	...	...	...	12.14
Water	...	...	...	...	...	...	...	...	1.02
Loss and undetermined	...	...	...	...	...	...	...	...	.34
									<hr/> 100.00

No. 64.—*Blue Carbonate of Copper Azurite.*

Silica	...	...	...	...	...	...	...	...	29.28
Copper	...	...	...	...	...	...	...	...	38.23
Bismuth	...	...	...	...	...	...	...	...	.21
Iron	...	...	...	...	...	...	...	...	.78
Carbonic acid	...	...	...	...	...	...	...	...	17.47
Water	...	...	...	...	...	...	...	...	3.79
Oxygen and loss	...	...	...	...	...	...	...	...	10.24
									<hr/> 100.00

The proximate constituents calculated from these numbers are —

Silica	...	...	...	...	...	...	...	...	29.28
Azurite ($3\text{CuO}_2\text{CO}_2\text{H}_2\text{O}$)	...	...	...	...	...	...	...	...	69.45
Oxide of bismuth	...	...	...	...	...	...	...	...	.22
Ferric oxide	...	...	...	...	...	...	...	...	1.12
Water	...	...	...	...	...	...	...	...	.18
									<hr/> 100.25

SILVER.

THIS metal, though hitherto almost entirely neglected, is probably destined to take a prominent position amongst the mineral productions of this Colony. It has long been known that rich deposits of silver exist in various localities, and lodes have been opened and more or less worked here and there; but until the recent discoveries at Boorook, in the Tenterfield District, no great attention had been paid to this metal, and very little practical knowledge of the treatment of silver ores has been acquired. Indeed there can be little doubt that the neglect of our silver lodes has been due wholly, or to a great extent, to want of skill on the part of our miners in treating the ores, and even now, when the working of silver lodes has, as it were, been forced upon them, by the discovery of the rich lodes at Boorook, it is very doubtful whether they are not from want of experience pursuing a most wasteful process.

Of course the necessary experience will in due time be gained, even supposing no experts be attracted to the field, but in the meantime, the loss of mineral will probably be very large. This loss would doubtless be reduced very materially if the owners of silver mines would combine and secure the services of a thoroughly experienced silver-miner and metallurgist to test their ores and direct their operations.

This want has to some extent been met at Boorook by the settlement there of Mr. Davy, a gentleman of very extensive experience of silver mining in Europe.

The lodes at Boorook are very numerous, and traverse a large extent of country, but up to the present time they have not been explored to any depth. Samples of the ore have yielded on assay from about 1 oz. up to 522 ozs. per ton.

The appliances on the field for reducing and treating the ore are quite inadequate, and consequently the working of the lodes is retarded. Nevertheless, Mr. Warden Graham reports that the progress though slow is on the whole satisfactory. The principal mine (the Golden Age) having put out 18,760 ozs. in 1879, as against 4,128 ozs. in 1878. As an evidence of the improvement in treatment, the quantity of silver obtained during the latter half of 1879 far exceeds previous half-years, though the quantity of ore treated is much less.

The richness of the lodes at Boorook will probably lead to the working of lodes in other parts of the Colony, and thus our output of minerals will be materially increased. Already rich discoveries are reported to have been made near Kempsey, in the Hunter and Macleay District, and payable lodes are believed to exist in the ranges at Jinglemoney, to the westward of Braidwood. The galena lode at Wellingrove, in the Glen Innes District, is still being prospected; the shaft has been sunk to a depth of 50 feet, and the lode has widened to 5 feet.

Prior to 1878 the total output of silver amounted to 434,379 ozs., valued, at £112,139. Since the beginning of 1878 we have raised 143,727 ozs., valued at £31,362. Of this the greater part is probably from the recently discovered lodes at Boorook. The output for 1879 is 83,164 ozs., valued at £18,071.

The following assays and analyses have been made during the year by Mr. W. A. Dixon, F.C.S., &c. :—

SILVER ORES.

No. 34. Reddish quartz, containing iron pyrites in distinct cubic crystals, from Golden Crown Reef, new claim, Boorook, contained—Silver, 3 dwts. per ton; gold, 8 dwts. 19 grs. per ton.

No. 35. Similar to above, from near Boorook, contained—Silver, 6 dwts. 5 grs. per ton; gold, 5 dwts. 10 grs. per ton.

No. 36. Stone from the Grand Junction Reef, Boorook—

	Analysis
Silica	91·765
Antimony	·182
Arsenic	Traces
Gold	·011
Silver	·129
Lead	1·492
Copper	·047
Zinc	·477
Iron	2·631
Sulphur	1·552
Water	1·008
Oxygen and loss	·756
	<hr/> 100·000

Gold, 3 ozs. 16 dwts. per ton; silver, 42 ozs. 4 dwts. 10 grs. per ton.

Calculated with its proximate constituents the above analysis gives—

Silica	91·765	
Sulphide of antimony	·184	
Gold	·011	
Sulphide of silver	·148	
" lead	1·722	
" zinc	·715	
" copper (Cu ₂ S)	·060	Copper pyrites, 0·142.
" iron (Fe ₂ S ₃)	·082	
" iron (FeS ₂)	1·774	
Oxide of iron	2·507	
Water	1·008	
	<hr/> 99·996	

No. 37. Stone from Mr. J. Moffat's property, Boorook.

	Analysis.
Silica	97.710
Iron	791
Zinc	Traces.
Lead	023
Copper	Traces.
Antimony	125
Silver and gold	004
Sulphur	324
Water	762
Oxygen and loss	261
	<hr/>
	100.000

Gold, 1 dwt. 14 grs. per ton; silver, 1 oz. 11 dwts. 5 grs. per ton.

Calculated into its proximate constituents this analysis gives--

Silica	97.710
Sulphide of antimony	174
Sulphide of silver	004
„ lead	026
„ iron (FeS ₂)	485
Oxide of iron	828
Water	762
	<hr/>
	99.984

- No. 38. Red veins from Mr. Moffat, Boorook. Quartz with ferric-oxide, a little magnetite, and traces only of arsenic, antimony, silver, and copper.
- No. 39. Quartz with specular (micaceous) iron ore and traces of manganese, from Boro, contained—Silver, 15 dwts. 5 grs. per ton; gold, 9 grs. per ton.
- No. 40. Quartz with bright red ferric-oxide, sulphide and chloride of silver, from Prospectors' shaft, Golden Crown Reef, Boorook, contained—Silver, 284 ozs. 18 dwts. 14 grs. per ton; gold, 47 ozs. 5 dwts. 14 grs. per ton.
- No. 41. Quartz with oxide of iron and iron pyrites from Prospectors' shaft, Grand Junction Reef, Boorook, contained—Silver, 5 ozs. 10 dwts. per ton; gold, 1 dwt. 15 grs. per ton.
- No. 42. Quartz, similar to the last, but containing chloride of silver, from Yates's lease, Grand Junction Reef, Boorook, contained—Silver, 124 ozs. 12 dwts. 19 grains per ton; gold, 17 dwts. 5 grs. per ton.
- No. 43. From Honeyman's Reef, Boorook, consisted of two different specimens—1st. Dark coloured quartz; 2nd. Reddish decomposed quartz, and yielded—Silver, 1 oz. 16 dwts. 10 grs. per ton; gold, 19 grs. per ton.
- No. 44. White quartz, stained in places with oxide of iron, and containing traces of iron pyrites, from Addison's Reef, Boorook, gave—Silver, 16 dwts. per ton; gold, 10 grs. per ton.
- No. 45. Minutely crystalline arsenical pyrites and metallic arsenic, from lode 8 feet wide, from Winterton Mine, Mitchell's Creek, contained—Silver, 12 ozs. 15 dwts. 14 grs. per ton; gold, 9 dwts. 5 grs. per ton; lead, traces.
- No. 46. Grey quartz, containing galena, from Tenterfield, contained—Silver, 4 dwts. 14 grs. per ton; gold, 5 grs. per ton.
- No. 47. Quartz, with mica and small quantities of galena and molybdenite, from King's Gate Run, Glen Innes, contained—Silver, 4 dwts. 15 grs. per ton.
- No. 48. Stone from Tarago—Silver, 15 dwts. 14 grs. per ton; gold, traces.
- No. 49. Quartz, with mispickel, from Nambuccra, contained—Silver, 27 ozs. 17 dwts. 14 grs. per ton; gold, 5 grs. per ton.
- No. 50. Sample of blende, with a little galena and mispickel, from Moruya, contained—Silver, 64 ozs. 14 dwts. 10 grs. per ton; gold, 1 dwt. 5 grs. per ton.
- No. 51. Nearly pure mispickel, containing only a little quartz, from Moruya, contained—Silver, 10 ozs. 12 dwts. 20 grs. per ton; gold, 5 ozs. 2 dwts. 19 grs. per ton.
- No. 52. Quartz, with mispickel and galena, the latter in small quantity only, from Moruya, contained—Silver, 19 ozs. per ton; gold, 8 dwts. 10 grs. per ton. See also from same mine Nos. 16, 17, 18, and 19 under gold.
- No. 53. Crystalline quartz, with small quantities of the carbonates of copper, copper and iron pyrites and galena, locality unknown, contained—Silver, 2 ozs. 9 dwts. 14 grs. per ton; gold, 10 grs. per ton.
- No. 54. Galena, from Glen Innes, contained—Silver, 2 ozs. 2 dwts. 10 grs. per ton; gold, 1 dwt. 5 grs. per ton.
- No. 55. Quartz with iron pyrites, from Jinglemoney, near Braidwood, contained—Silver, 2 ozs. 3 dwts. 5 grs. per ton; gold, 15 grs. per ton.

TABLE of assays of Silver Ores.

No.	Locality.	Gold per ton.			Silver per ton.			Remarks.
		ozs.	dwt.	grs.	ozs.	dwt.	grs.	
33	Addison's Reef, Boorook	18	6	10	522	2	0	Quartz—dark grey-coloured, with disseminated pyrites amounting to 10 15 per cent. Silver present as sulphide and sulph. antimonide, as well as free.
34	Bollvia, near Tenterfield	0	4	15	2	13	0	Mispickel.
35	Copenhagen Reef, Boorook	0	0	10	5	16	4	Quartz with galena. Lead, 13·40 per cent.
36	Addison Reef, Boorook	0	0	5	1	4	9	
37	Do. do.	0	18	10	20	8	0	Quartz much stained with oxide of iron.
38	Golden Age Reef, Boorook	0	9	14	80	1	5	Quartz soft and friable, reddish-coloured, with some pyrites.
39	Silver Age Reef, Boorook	0	0	5	1	4	19	Porous quartz, much stained with oxide of iron.
40	Copenhagen Reef	0	0	0·188	0	0	2·271	Piece of amalgam from 4 lbs. stone yielded a button weighing 1 oz. 12 dwts.
41	Golden Age Reef, Boorook	3	15	5	248	13	14	Pyrites before amalgamation in Berdan machine.
42	.....	8	0	0	446	6	19	Pyrites after amalgamation in the Berdan machine. It is evident that the lighter material had been washed away during the grinding, and the material left was thus enriched; or that a portion of the denser particles had been sent, as No. 42; evidently contained less quartz than No. 41.
43	New Reef, Boorook	0	1	5	6	7	14	Quartz containing galena, mispickel, and iron pyrites.
44	Tenterfield	5	11	14	459	16	10	Surface stone (red and black quartz) with drusy cavities containing antimonide of silver; quartz contains sulphide of silver and small threads of native silver.
50	Golden Crown Reef, about 10 chains west of Addison Reef, Boorook	0	9	5	37	15	14	Surface stone; consisted of two different stones, one similar to No. 50, the other bluish-gray quartz with yellow veins.
51	Alderman Reef, about 8½ miles N.N.W. of Boorook Station.	0	0	19	5	10	0	Surface stone; red quartz, much stained with oxide of iron.
52	Woolshed Reef, near Alderman Reef	1	4	0	98	16	19	Stone from 50-feet level; bluish quartz showing iron pyrites, numerous small thread-like veins of sulphides of silver and lead, and small drusy cavities with antimonide of silver.
53	Golden Age Reef, Boorook	0	10	19	42	10	0	Stone from 30-feet level; rather dense bluish quartz, with finely disseminated pyrites.
54	Addison Reef, Boorook	1	0	0	83	12	19	Crushed stone from the stamper-boxes. The stone was taken from the 50-feet level.
46	Golden Age Reef, Boorook	0	17	5	71	14	19	Blanketings.
47	Do. do.	0	9	5	88	1	14	Tallings from Berdan pans.
48	Do. do.	0	2	9	10	1	5	Tallings from the blanketings.
49	Do. do.	4	5	14	224	13	14	Sample, consisting of quartz with bright red oxide of iron, sulphides, and chloride of silver.
50	Golden Crown, Prospector's Shaft, Boorook.	0	1	15	5	10	0	Consisting of quartz with oxide of iron and iron pyrites.
31	Grand Junction, Prospector's Shaft, Boorook.	0	1	15	5	10	0	Similar in appearance to No. 31, but contains silver as chloride.
32	Grand Junction, Yates's Lease	0	0	19	1	16	10	Consisted of two different specimens—first, dark-coloured quartz; second, of a reddish decomposed quartz.
33	Honeyman's Reef	0	0	10	0	16	0	Consisting of white quartz with oxide of iron and traces of sulphide of iron (iron pyrites).
34	Addison Reef							

IRON.

IRON is justly considered one of the most important minerals, because it, in conjunction with coal, contributes, perhaps more than any other mineral, to the permanent wealth of the country in which it is found to exist in abundance.

That extensive deposits of rich iron ore exist in this Colony has been demonstrated, and in some localities coal and lime in abundance are found in close proximity to it; but notwithstanding these facts, very little has yet been done towards developing this source of wealth. Prior to 1878 our total output of iron did not exceed in value £36,935; as regards the quantity, the records are too imperfect to be reliable. Since the beginning of 1878 our output amounts to 2,018 tons, which is valued at £17,216.

At Mittagong, in the south, large sums of money have been expended by the Fitzroy Company in the erection of furnaces and other works, and some very excellent samples of pig iron were made; but although the supply of ore appears to be practically unlimited the works have been stopped for some time past.

At Lithgow Valley, in the west, the Eskbank Company have more recently erected extensive works. These works were originated in 1875 by the present manager of the Company, Mr. E. Hughes, who has had a very large experience in the smelting of iron ores in this Colony and elsewhere, and the success which has attended the operations of the Company so far is doubtless in a great measure due to that experience, because it is found that not only the ore but also the coal and lime possess peculiarities requiring special treatment. This mine consists of about 8,000 acres of land, containing both coal and iron. Upon the surface of this land is found clay of excellent quality for brick-making, then a foot of iron ore, then a bed of freestone suitable for building purposes; below this is a bed of fireclay 6 feet thick; and below that again a bed of freestone, so hard that the Company cut their own grindstones from it; and still lower is a 10-foot seam of coal. In addition to these there is an abundance of water and plenty of moulders' sand.

The works consist of furnace, foundry, and forge and rolling-mill; the two branches are connected by a horse tramway; most of the plant, including a 24-ton fly-wheel, was made upon the ground. The blast furnace is capable of producing 100 tons of gray or 115 tons of white iron per week. Both pig and malleable iron are made, and a large quantity of rails for the Sydney tramway have been rolled. The Company have a plant for making boiler-plates, and will shortly add appliances for the manufacture of corrugated iron and wire.

LEAD.

HITHERTO little attention has been given to this metal, although it is known that lead ore occurs in the following localities in the form of galena, namely: Mount Grosvenor, Peel (near Bathurst), Glen Innes, Yass, Woolgarlo (near Yass), Mylora (near Yass), Darby's Run (near Tingha), Brook Creek, Gundaroo, Silverdale, (near Bowning), Bookham (in the county of Harden), Ravenswood, Wiseman's Creek, Murrumburrah, Canberra Plains, Winterton Mine (at Mitchell's Creek), Bungonia, and Peelwood.

The following assays of ore from some of the places named will give an idea of the value of the ore, but up to the present little information concerning the size of the lodes has been obtained:—

				ozs. dwts. grs.	
Ore from Mount Grosvenor	Assay—	Lead,	24.91 %	Silver,	9 0 15 per ton
" Glen Innes	"	Lead,	18.39 %	Silver,	2 12 0 "
" near Yass	"	Lead,	51.89 %	Silver,	2 13 5 "
" near Yass	"	Lead,	61.80 %	Silver,	4 13 14 "
" Woolgarlo, near Yass	"	Lead,	81.23 %	Silver,	1 0 10 "
" Brook Creek, near Gundaroo...	"	Lead,	72.58 %	Silver,	23 0 0 "
" Bungonia	"	Lead,	83.76 %	Silver,	7 3 17 "
" near Tingha	"	{ Lead,	26.16 %	Silver,	12 16 10 }
		{ Copper,	7.92 %	Gold,	0 0 9 }
" Northern District	"	{ Lead,	28.01 %	Silver,	1 2 5 }
		{ Copper,	5.54 %	Gold,	0 0 5 }

There appears now to be an inclination to devote attention to these lodes, and it is to be hoped that ere long some of them will be developed, and that lead will soon become an important item of our mineral products.

ANTIMONY.

THIS mineral is being worked at Lunatic and at Gordon Brook, and at Mungay Creek; near Kempsey, some very rich deposits are said to have recently been discovered, which will be extensively worked.

During 1879 only about 70 tons of ore and about 7 tons of metal were exported, the aggregate value being £1,046 ; consequently there is ample room for the opening up of additional mines.

In addition to the localities abovenamed, antimony is found at Tenterfield, Drake, Grafton, Rocky River, Macleay and Hastings Rivers, near Mount Mitchell, Booroolong, Gara, Rylstone, Wallerawang, Shoalhaven River, Gundagai, Eden, Twofold Bay, &c.

BISMUTH.

A LODE is being worked at Kingsgate, in the Glen Innes District, and there appears to be a probability of lodes being opened in other localities.

The following assays have been made by Mr. Dixon, F.C.S., &c.

From Tingha—*Carbonate of Bismuth*.—Waterworn nodules of carbonate and oxide of bismuth, white to dark brown in colour, contained bismuth 60.43 per cent., carbonate of bismuth, rolled fragments, associated with talc and ferric oxide, contained bismuth 62.75 per cent.

- No. 64. Picked specimens of quartz containing iron pyrites, mispickel, and metallic bismuth, from a reef near Adelong, contained—Bismuth, 5.60%.
- No. 65. A yellow friable ochreous mass of carbonate and oxide of bismuth, with quartz and molybdic oxide, from Tenterfield, contained—Bismuth, 43.29 %; Molybdenite, 6.60 %.
- No. 66. Quartz, with metallic bismuth, carbonate of bismuth, molybdic oxide, and sulphide, from a reef 4 feet wide, near Tenterfield, contained—Bismuth, 60.09 %; gold, 1 oz. 4 dwt. 10 grs. per ton; silver, 8 dwts. 10 grs. per ton.

MANGANESE ORES.

THE following analyses have been made by Mr. Dixon, F.C.S., &c., during the year:—

No. 69. Specimens of wad from Trunkey gave on analysis—

Silica	25.84
Oxide of iron and traces alumina	24.72
Oxide of manganese	34.98
Oxide of cobalt and traces nickel	2.11
Magnesia	1.00
Water	11.15
Alkalies and loss	.25
	<hr/> 100.00

The large quantity of oxide of iron would militate against the employment of this ore as a source of chlorine. The ratio of the productive acid required to generate chlorine (one-half of which would be obtained as chlorine) to the non-productive would be 1:2.31. Again the percentage of oxide of cobalt is too low to enable the ore to compete with the similar ores from New Caledonia, which contain from 8 to 10 per cent.

No. 70. From near Goulburn, sent to be assayed for cobalt, but consisted chiefly of oxides of iron and manganese, with traces only of cobalt.

No. 71. A breccia of quartz, cemented together with oxide of manganese, with traces of copper, lead, zinc, and cobalt, locality unknown, contained—Manganese, 21.92; and available oxide (MnO_2), 30.50.

No. 72. A tolerably clean specimen of oxide of manganese, locality unknown, contained—Manganese, 41.42; available oxide, 59.30.

No. 80. Sample from Boro, Goulburn District, consisting of oxide of manganese mixed with quartz, contained—

Available oxide of manganese (MnO_2)	...	...	...	...	...	23.27
Other substances soluble in acid, chiefly oxide of iron	...	...	...	...	...	29.33
Quartz	...	...	...	...	...	47.40
						100.00

No. 81. From Boro, Goulburn District, also oxide of manganese, not showing quartz, contained—

Available oxide of manganese	...	...	...	...	...	37.84
Other substances soluble in acid, chiefly oxide of iron	...	...	...	...	...	22.76
Silica	...	...	...	...	...	39.40
						100.00

LIMESTONES.

THE following analyses made by Mr. Dixon, F.C.S., during the year:—

No. 73.

This and the following stone, from Bulli, were sent to be analysed with a view of making use of them as sources of hydraulic cement—

						Analysis.	
Moisture and organic matter	...	...	...	...	...	3.95
Carbonate of calcium	62.44	} Soluble in acid.
" magnesium	...	...	...	...	...	.86
Alumina	...	...	...	...	...	2.96
Oxide of iron	...	...	...	...	...	4.09
Alkalies and loss	...	...	...	...	...	.17
Lime84	
Alumina and traces oxide of iron	...	...	...	...	...	2.10
Silica	...	...	...	...	...	23.09
						100.00	

No. 74.

Moisture and organic matter	2.82	} Soluble in acid.
Carbonate of calcium	...	...	...	...	...	92.04
" magnesium	...	...	...	...	...	1.32
Alumina	...	...	...	...	...	1.02
Oxide of iron	...	...	...	...	...	.63
Alkalies and loss23	
Silica	...	...	...	...	...	1.94
						100.00	

A mixture of these two limestones, in the proportion of three parts of the first and one of the second, would on burning give a residue having nearly the composition of Portland cement.

WATERS.

THE following analyses were made by Mr. Dixon, F.C.S., during the year:—

- No. 80. Water from a spring near Blayney Railway Station, having a constant temperature of 88° F. It was sent in the belief that it might have some therapeutic value, but the small quantity and general character of the salts held in solution precludes this idea.

The following is an analysis:—

Carbonate of calcium	...	...	...	...	...	9.61 grains per gln.
Oxide of iron, alumina, and traces of silica	...	...	...	...	...	4.40
Sulphate of magnesium	...	...	...	...	...	1.92
Sulphate of calcium	...	...	...	...	...	traces.
Sulphate of sodium	...	...	...	...	...	.49
Chloride of sodium	...	...	...	...	...	.64
Carbonate of sodium	...	...	...	...	...	3.53
Loss on ignition	...	...	...	...	...	2.60
						<hr/> 23.19
Total solids by direct determination dried at 212° F.	...	...	...	...	...	<hr/>23.97
Free ammonia	...	...	...	...	...	0.01 parts per million.
Albuminoid ammonia	...	...	...	...	...	0.06 " "

The water was clear and bright, but had deposited a small quantity of oxide of iron.

The residue scarcely blackened on ignition, and showed no evidence of the presence of nitrates.

- No. 81. Water from the springs known as "Soda-water Springs," 10 miles from Cooma, on the road to Dangelong, on the Flat Rock Station.

						Analysis.
Carbonate of iron	...	...	...	...	...	1.40
" calcium	...	...	...	...	...	40.10
" magnesium	...	...	...	...	...	11.54
" sodium	...	...	...	...	...	42.95
" potassium	...	...	...	...	...	8.50
" magnesium	...	...	...	...	...	10.81
" lithium	...	...	...	...	...	.21
Chloride of sodium	...	...	...	...	...	3.98
Silica	...	...	...	...	...	1.03
Organic matter and loss on ignition	...	...	...	...	...	13.40
						<hr/> 128.92
Total solids dried at 212° F.....	...	...	...	...	...	128.06 grs.
Carbonic acid (free) 24.81 grs. = 53.04 cubic inches per gallon.						

This water contains much organic matter, and the residue blackens strongly on ignition; it burns off without any indication of the presence of nitrates, whilst only traces of sulphates are present. The water had a peculiar and disagreeable odour reminding one of some of the petroleum gases, and it probably contains other gases in solution besides carbonic acid. The quantity of water at my disposal was too small to examine the gases, or more particularly to test for nitrates or to determine combined nitrogen in other forms.

VARIOUS MINERALS.

THE following analyses were made by Mr. Dixon, F.C.S., during the year:—

- No. 82. Stone from Hawkins Hill, consisting of micaceous scales, mixed with finely divided silica. The minute scales, separated as far as possible from the silica, were analysed and found to consist of potash mica (muscovite); but the analysis shows an excess of silica, from the impossibility of completely separating the quartz.

						Analysis.
Water	...	...	...	...	...	1.70
Alumina	...	...	...	...	...	30.51
Oxide of iron	...	...	...	...	...	4.59
Lime	...	...	...	...	...	.36
Magnesia	...	...	...	...	...	1.73
Potash	...	...	...	...	...	7.61
Silica	...	...	...	...	...	53.55
						<hr/> 100.06

No. 83. A yellowish-white porous mass, containing numerous tufts and masses of acicular crystals (hair salts), from Bungonia, gave on analysis—

Sulphuric oxide	...	...	...	...	...	...	...	23.74	} Soluble in water.
Sulphurous oxide	...	...	...	...	...	...	...	Traces	
Alumina	...	...	...	...	...	...	...	11.65	
Ferrous oxide	...	...	...	...	...	...	...	1.10	
Magnesia	...	...	...	...	...	...	...	.99	
Potash	...	...	...	...	...	...	...	1.36	} Soluble in acid.
Soda	...	...	...	...	...	...	...	Traces	
Ferrie oxide	...	...	...	...	...	...	...	1.91	
Magnesia	...	...	...	...	...	...	...	Traces	
Silica	...	...	...	...	...	...	...	32.25	
Water	...	...	...	...	...	...	...	27.12	
								100.12	

It is somewhat difficult to state the proximate constituents of this substance, as there is not enough sulphuric acid present to form normal salts, nor enough water to yield with the sulphate of alumina the usual crystalline salt. The probable contents are—

Sulphate of alumina and potash (alum)	...	...	...	...	10.61
Sulphate of magnesia (epsom salts)	...	...	...	...	5.09
Sulphate of iron (copperas)	...	...	...	...	3.58
Sulphate of alumina ($\text{Al}_2\text{O}_3\cdot 3\text{SO}_3$)	...	...	...	...	23.06
Basic sulphate of alumina ($3\text{Al}_2\text{O}_3\cdot \text{SO}_3$)	...	...	...	...	3.50

For a native sulphate of alumina this mineral is remarkably free from ferrous sulphate, which is generally found to equal the alumina.

No. 84. Mineral occurring in serpentine at Hanging Rock. It is massive, translucent, with a sea-green colour, waxy lustre, and unctious feel; gives a white streak and powder. In a sealed tube it gives off water and becomes white; before the blowpipe it is infusible, but becomes opaque and reddish white, and is not acted on by hydrochloric acid.

Hardness, 2; specific gravity, 2.68.

								Analysis.		
Silica	...	...	...	...	...	...	...	35.72	...	36.10
Alumina	...	...	...	...	...	...	...	38.60	...	38.41
Oxide of iron (Fe_2O_3)	...	...	...	...	...	...	...	8.64		
Magnesia	...	...	...	...	...	...	...	5.40	...	5.64
Lime	...	...	...	...	...	...	...	.61		
Water	...	...	...	...	...	...	...	10.86		
								99.93		

The mineral seems to be new, and the ratio of the oxygen in $\text{R} \ddot{\text{R}}_2 \ddot{\text{Si}} \ddot{\text{H}}$ is 1: 4.2: 4.5: 2.3, which would give a formula approximating to—4 ($\text{Fe} \text{Mg} \text{Ca}$) 6 $\ddot{\text{Al}}$ 9 $\ddot{\text{Si}}$ 9 $\ddot{\text{H}}$.

SUMMARY.

IN conclusion, I have the honor to submit a summary of the quantity and value of the various minerals produced. I regret that the result of the year's operations (as exhibited by the information I have been able to collect) is less satisfactory than had been anticipated; but I am not certain that had complete statistics been obtainable more satisfactory results would not have been shown. There is, however, in some branches of mining evidence of improvement, and, without being over sanguine, I think there are fair grounds for believing that the output of minerals in 1880 will largely exceed that of 1879.

The aggregate value of minerals the produce of New South Wales to the 31st December last is £50,726,443 13s.

	Quantity.	Value.	Total Value.
		£ s. d.	£ s. d.
Quantity and value of gold raised prior to 1st January, 1879	8,847,302'30 ozs.	32,928,582 3 2	
Quantity and value of gold raised during 1879	109,649'63 "	407,218 13 5	
Totals	8,956,951'93 ozs.	33,335,800 16 7	33,335,800 16 7
Quantity and value of silver raised prior to 1st January, 1879	494,942 ozs.	125,430 0 0	
Quantity and value of silver raised during 1879.....	83,164 "	18,071 0 0	
Totals	578,106 ozs.	143,501 0 0	143,501 0 0
Quantity and value of coal raised prior to the 1st January, 1879	19,056,694 tons.	10,085,843 18 2	
Quantity and value of coal raised during 1879.....	1,583,381 "	950,878 18 3	
Totals	20,640,075 tons.	11,036,722 16 5	11,036,722 16 5
Quantity and value of shale raised prior to the 1st January, 1879	161,670 tons.	428,643 10 0	
Quantity and value of shale raised during 1879.....	32,519 "	66,930 10 0	
Totals	194,189 tons.	495,574 0 0	495,574 0 0
Quantity and value of tin raised prior to the 1st January, 1879	Ingots 29,881 tons.	2,771,888 0 0	
Quantity and value of tin raised during 1879.....	Ore 12,107 "	372,349 0 0	
	Ingots 5,107 " 2 cwt.		
	Ore 813 " 15 "		
Totals .....	.....	3,144,237 0 0	3,144,237 0 0
Quantity and value of copper raised prior to the 1st January, 1879	Ingots 29,200 tons.	2,237,085 0 0	
Quantity and value of copper raised during 1879	Ore & Regulus 2,905 ts.	257,352 0 0	
	Ingots 4,106 tons.		
	Ore & Regulus 36 "		
Totals .....	.....	2,494,437 0 0	2,494,437 0 0

SUMMARY—continued.

	Quantity.	Value.	Total Value.
		£ s. d.	£ s. d.
Value of iron raised prior to the 1st January, 1879	* 900 tons.	{ 36,935 0 0	
Quantity and value of iron raised during 1879.....		{ 6,666 0 0	
	1,118 "	10,550 0 0	
Totals	2,018 tons.	54,151 0 0	54,151 0 0
Quantity and value of antimony raised prior to 1st January, 1879	Ore 190 tons 19 cwt. Regulus 142 " 0 " Metal 54 " 13 "	{ 9,132 0 0	
Quantity and value of antimony raised during 1879			
	Ore 69 " 9 " Metal 7 " 7 "	{ 1,046 0 0	
Totals		10,178 0 0	10,178 0 0
Quantity and value of lead raised prior to the 1st January, 1879	92 tons 12 cwt.	1,975 0 0	
Quantity and value of lead raised during 1879.....	18 " 13 "	535 0 0	
Totals	111 tons 5 cwt.	2,510 0 0	2,510 0 0
Quantity and value of mixed minerals raised prior to 1st January, 1879.....	308 tons.	8,807 0 0	
Quantity and value of mixed minerals raised during 1879	25 "	525 0 0	
Totals	333 tons.	9,332 0 0	9,332 0 0
Total			50,726,443 13 0

* Prior to 1st January, 1878, the quantity of iron is not recorded, but simply the value.

I have, &c.,

HARRIE WOOD,

Department of Mines, Sydney, 9th April, 1880.

Under Secretary for Mines.

TABLE showing approximately the number of Miners employed in Gold-mining, the quantity of Gold won, the area of ground worked, and the value of Machinery, in the Colony of New South Wales, during the year 1879.
(Compiled from Mining Registrars' Returns.)

District and Division.	Alluvial Miners.		Quartz Miners.		Total Miners.	Quantity of Gold.			Price of Gold per ounce.		Value of Gold won.	Alluvial ground worked.	Quartz Beels proved to be auriferous.	Value of Machinery.
	Euro-pean.	Chinese.	Euro-pean.	Chil-nese.		Alluvial.	Quartz.	Total.	From.	To.				
No.	No.	No.	No.	No.	ozs. dwts. grs.	ozs. dwts. grs.	ozs. dwts. grs.	s. d.	s. d.	£	Square miles.	No.	£	
BATHURST DISTRICT—														
Bathurst Division	35	65	10	15	125	200 0 0	50 0 0	250 0 0	70/0	77/6	930 0 0	...	...	...
Trunkley "	38	15	22	...	75	912 3 0	781 15 22	1693 18 22	73/6	74/6	6267 12 6	270	9	6850
Tuena "	30	30	12	...	72	370 0 0	22 14 0	392 14 0	72/6	74/0	1423 7 1	...	...	5200
Carrooar " .....	...	...	75	...	75	...	4718 0 23	4718 0 23	...	...	13420 3 3	...	...	3500
Cowra "	18	...	...	...	18	83 0 0	...	83 0 0	75/0	75/0	311 5 0	...	...	200
Rockley "	17	14	...	...	31	359 0 0	...	359 0 0	75/0	76/0	1347 0 0	25	9	300
Orange "	52	...	...	...	52	860 0 0	...	860 0 0	70/0	75/0	3062 3 8	...	...	1800
Mitchell's Creek Division.	21	12	24	...	57	420 0 0	280 10 0	700 10 0	40/0	74/0	2331 5 0	150	10	1700
Oberon Division.....	2	...	...	...	2	7 0 0	.....	7 0 0	70/0	70/0	24 10 0	1	...	400
	213	136	143	15	507	3211 3 0	5853 0 21	9064 3 21	40/0	77/6	29117 6 6	445 1/2	28	19950
TAMBARORA AND TURON DISTRICT—														
Hill End Division	236	303	247	3	789	.....	.....	9566 17 6	78/3	78/3	37430 15 0	...	...	33240
Sofala "	267	226	50	...	543	4308 15 9	680 18 23	4989 14 8	75/0	76/0	18711 8 9	10	37	3900
Ironbarks "	150	50	100	...	300	221 0 0	817 10 0	1038 10 0	75/0	80/0	3894 2 6	100	22	3000
	653	579	397	3	1632	4529 15 9	1498 8 23	15595 1 14	75/0	80/0	60036 6 3	110	59	40140
MURDERS DISTRICT—														
Gulgong Division .....	...	...	...	...	...	.....	.....	7504 11 2	78/1	78/1	29269 10 0	...	...	7400
Mudgee "	205	10	...	...	215	5243 7 1	.....	5243 7 1	70/0	78/0	19400 8 0 1/2	...	...	...
Hargraves "	74	124	...	...	198	2938 14 12	.....	2938 14 12	73/6	77/6	11020 4 4 1/2	20	...	800
Wellington "	50	30	57	...	137	1488 14 2	1411 6 12	2900 0 14	77/6	77/6	11237 10 0	...	2	10000
Windeyer "	165	135	7	...	307	3100 0 0	.....	3100 0 0	76/0	77/0	11815 0 0	350	20	2540
	494	299	64	...	657	12770 15 15	1411 6 12	21686 13 5	70/0	78/1	82742 12 5	370	22	20740

TABLE showing approximately the Number of Miners, &c.—continued.

District and Division.	Alluvial Miners.		Quartz Miners.		Total Miners.	Quantity of Gold.			Price of Gold per ounce.		Value of Gold won.	Alluvial ground worked.	Quartz Reefs proved to be auriferous.	Value of Machinery.
	Euro-pean.	Chinese.	Euro-pean.	Chinese.		Alluvial.	Quartz.	Total.	From.	To.				
	No.	No.	No.	No.	No.	oss. dwts. gra.	oss. dwts. gra.	oss. dwts. gra.	s. d.	s. d.	£ s. d.	Square miles.	No.	£
LACHLAN DISTRICT—														
Forbes Division	100	...	...	...	100	760 18 3	...	760 18 3	72/6	77/6	2872 8 5	120	20	10450
Parkes "	463	20	37	...	520	3208 10 0	494 1 12	3702 11 12	75/0	75/0	14939 9 4	...	12	2550
Cargo "	20	...	25	...	45	300 0 0	1260 0 0	1560 0 0	74/0	75/0	5550 0 0	2	20	5000
Grenfell "	21	...	44	...	65	316 15 0	1146 13 6	1463 8 6	75/0	77/0	5560 19 4	5	7	4500
Young "	...	...	...	...	...	...	...	1755 13 0	...	...	6800 0 0	...	...	...
Baker "	800	...	10	...	810	200 0 0	...	200 0 0	75/0	76/0	760 0 0	...	...	...
	1404	20	116	...	1540	4786 3 3	2900 14 18	9442 10 21	72/6	77/6	36482 17 1	127	59	22500
SOUTHERN DISTRICT—														
Braidwood Division	110	50	...	...	160	860 0 0	...	860 0 0	73/0	75/0	3200 0 0	10	...	7000
Araluen "	337	92	6	4	439	4403 0 0	123 10 9	4526 10 9	68/0	76/6	17000 0 0	...	...	22150
Major's Creek "	99	7	6	...	112	1581 17 0	117 10 0	1599 7 0	72/0	75/6	6289 12 0	...	20	2250
Little River "	110	93	...	...	203	2262 0 0	...	2262 0 0	76/6	77/0	8708 14 0	36	40	2210
Nerrigundah "	75	96	...	...	171	1649 16 23	...	1649 16 23	73/3	80/0	6264 14 6	...	...	800
Shoalhaven "	...	...	64	...	64	...	1772 15 0	1772 15 0	65/0	66/0	5895 10 0	1	...	3000
Moruya "	47	...	3	...	50	205 11 9	24 0 0	229 11 9	71/0	75/6	862 18 9	10	6	2000
Rombla "	11	100	...	...	111	629 7 20	...	629 7 20	76/0	76/0	2394 0 0	...	...	...
Nerriga "	20	15	...	...	35	520 0 0	...	520 0 0	75/0	75/0	1950 0 0	...	...	...
Bega "	...	...	...	...	...	...	...	691 4 10	76/0	76/0	2629 12 0	...	...	...
Gunning "	...	...	...	...	...	25 0 0	...	25 0 0	74/0	77/9	93 15 0	...	2	...
	809	453	79	4	1345	12136 13 4	2037 15 9	14865 12 23	65/0	80/0	55288 16 3	57	68	39410
TUMUT AND ADELONG DISTRICT—														
Adelong Division	250	100	250	...	600	...	...	11003 12 23	74/0	79/0	42946 1 5	10	4	10000
Tumut "	...	...	...	...	...	...	...	1329 0 0	66/0	66/0	4385 18 0	...	...	...
Tumbarumba "	250	50	13	...	313	1589 0 0	607 7 0	2196 7 0	75/0	76/0	7684 18 11	25	10	34020
Kiandra "	40	80	...	...	120	1500 0 0	...	1500 0 0	72/0	73/0	5400 0 0	30	...	6000
Yarras "	...	...	...	...	...	...	...	150 0 0	74/0	74/0	555 0 0	...	...	...
Albury "	...	...	40	...	40	...	160 0 0	160 0 0	75/0	78/0	624 0 0	2	5	1100
Queenbeyan "	...	...	5	...	5	...	71 0 0	71 0 0	69/10	77/0	248 0 0	1	1	300
Gundaroo "	10	...	9	...	19	86 6 15	37 4 0	123 10 15	70/0	80/0	484 1 0	5	3	2000
	550	230	317	...	1097	3175 6 15	875 11 0	16533 10 14	66/0	80/0	62327 19 4	73	23	54320

TABLE showing approximately the Number of Miners, &c.—continued.

District and Division.	Alluvial Miners.		Quartz Miners.		Total Miners.	Quantity of Gold.			Price of Gold per ounce.		Value of Gold won.	Alluvial ground worked.	Quartz Roasts proved to be satisfactory.	Value of Machinery.
	Euro-pean.	Chinese.	Euro-pean.	Chi-nese.		Alluvial.	Quartz.	Total.	From.	To.				
PEEL & URALLA DISTRICT— Arundale Division..... Uralla "..... Nundle "..... Scone "..... Barraba "..... Bingera "..... Walaha ".....	No.	No.	No.	No.	No.	ozs. dwts. grs.	ozs. dwts. grs.	ozs. dwts. grs.	s. d.	s. d.	£ s. d.	Square miles.	No.	£
	55	25	.....	...	80	722 16 6	.....	722 16 6	75/0	76/0	2720 10 11	.....	3	2600
	130	50	.....	...	180	2030 0 0	.....	2030 0 0	75/6	76/0	7677 2 6	.....	.....	.....
	40	80	100	...	220	2200 0 0	1342 15 0	3542 15 0	77/0	77/0	13639 11 9	8	20	4100
	.....	.....	.....	...	.....	.....	.....	100 0 0	75/0	75/0	375 0 0	.....	.....	.....
	44	2	3	...	49	424 0 0	.....	424 0 0	70/0	72/0	1484 0 0	6	4	700
	100	20	.....	...	120	1100 0 0	.....	1100 0 0	72/6	75/0	4125 0 0	20	.....	600
	.....	.....	.....	...	.....	100 0 0	145 0 0	245 0 0	73/0	73/0	894 5 0	.....	.....	.....
	369	177	103	...	649	6576 16 6	1487 15 0	8164 11 6	70/0	77/0	30915 10 2	34	27	8000
	NEW ENGLAND AND CLARENCE DISTRICT— Tenterfield Division ... (Sollerino) Lionsville Division Dalmorton Division ... Boorook "	9	9	170 0 0	170 0 0	50/0	50/0	425 0 0	1
35		2	5	...	42	415 18 18	57 14 6	473 13 0	68/0	72/0	1656 15 6	.....	.....	1870
21		.....	.....	...	21	200 0 0	.....	200 0 0	75/0	75/0	750 0 0	308	64	5000
...		.....	.....	...	.....	.....	.....	2816 0 0	65/0	...	9152 0 0	.....	.....	.....
65		2	5	...	72	785 18 18	57 14 6	3659 13 0	50/0	75/0	11983 15 6	309	64	6870
HUNTER & MACLEAY DISTRICT— Copeland Division.....	20	... ..	580	...	600	.....	10015 13 12	10015 13 12	70/0	70/0	35056 7 3	.....	50	10000
	20	.....	580	...	600	.....	10015 13 12	10015 13 12	70/0	70/0	35056 7 3	.....	50	10000
	3	.....	.....	...	3	45 0 0	.....	45 0 0	...	...	173 5 0	.....	.....	20
NOT WITHIN A MINING DISTRICT— Urana	3	.....	.....	...	3	45 0 0	.....	45 0 0	...	...	173 5 0	.....	.....	20
	3	.....	.....	...	3	45 0 0	.....	45 0 0	...	...	173 5 0	.....	.....	20

Summary.

(Compiled from Mining Registrars' Reports.)

TABLE showing approximately the Number of Miners employed in Gold-mining, the quantity of Gold won, the area of ground worked, and the value of Machinery, in the Colony of New South Wales, during 1879.

District and Division.	Alluvial Miners.		Quartz Miners.		Total Miners.	Quantity of Gold:			Price of Gold per ounce.		Value of Gold won.	Alluvial ground worked.	Quartz reefs proved to be auriferous.	Value of Machinery.
	Euro-pean.	Chil-nese.	Euro-pean.	Chil-nese.		Alluvial.	Quartz.	Total.	From.	To.				
	No.	No.	No.	No.	No.	ozs. dwt. grs.	ozs. dwt. grs.	ozs. dwt. grs.	s. d.	s. d.	£ s. d.	Square miles.	No.	£
Bathurst District.....	213	136	143	15	507	3211 3 0	5853 0 21	9064 3 21	40/0	77/6	29117 6 6	445½	28	19950
Tambaroora and Turon District.	653	579	397	3	1632	4529 15 9	1498 8 23	15595 1 14	75/0	80/0	60036 6 3	110	59	40140
Mudgee District	494	299	64	...	657	12770 15 15	1411 6 12	21686 13 5	70/0	78/1	82742 12 5	370	22	20740
Leichlan "	1404	20	116	...	1540	4786 3 3	2900 14 18	9442 10 21	72/6	77/6	36482 17 1	127	59	22500
Southern "	809	453	79	4	1345	12136 13 4	2037 15 9	14865 12 23	65/0	80/0	55288 16 3	57	68	39410
Tumut and Adelong District.	550	230	317	...	1097	3175 6 15	875 11 0	16533 10 14	66/0	80/0	62327 19 4	73	23	54320
Peel and Uralla District.	369	177	103	...	649	6576 16 6	1487 15 0	8164 11 6	70/0	77/0	30915 10 2	34	27	8000
New England and Clarence District.	65	2	5	...	72	785 18 18	57 14 6	3659 13 0	50/0	75/0	11983 15 6	309	64	6870
Hunter and Macleay District.	20	...	580	...	600	.....	10015 13 12	10015 13 12	70/0	70/0	35056 7 3	...	50	10000
Not within a Mining District.	3	...	...	...	3	45 0 0	.....	45 0 0	...	...	173 5 0	...	...	20
	4580	1896	1804	22	8102	48017 11 22	26138 0 5	109072 10 20	40/0	80/0	404124 15 9	1523½	400	221950

TABLE showing approximately the Number of Miners employed in mining for Minerals other than Gold or Coal at some of the principal mines, the quantity won during the year 1879, and the value of same, and the value of the plant.

Locality.	Miners employed.	Quantities.				Value.	Value of Machinery.	Remarks.
		Tin	Copper.	Iron.	Antimony.			
Bathurst	55	.....	tons.	tons.	.....	£ s. d.	£	Ore.
Rockley	15	.....	1,070	.....	.....	3,839 0 0	.....
Orange	6	.....	414	.....	.....	1,407 12 0	.....
Tuenas	20	.....	198	.....	.....	749 6 7	4,000	
Oberon	8	.....	500	.....	.....	6,500 0 0	4,000	
Cobar .....	.....	.....	500	.....	.....	1,750 0 0	400	
		.....	1,890	.....	.....	114,000 0 0	.....	Fine Copper.
	104	.....	4,572	.....	.....	128,245 18 7	8,400-	
Tingha	600	tons cwt.	.....	.....	.....	35,000 0 0	.....
Glen Innes	75	1,035 0	.....	.....	.....	15,700 0 0	.....
Vegetable Creek	1,000	300 0	.....	.....	.....	93,246 6 6	.....
Wilson's Downfall ..	317	2,715 6	.....	.....	.....	25,524 0 0	.....
	1,992	709 0	.....	.....	.....	169,470 6 0	.....
		4,759 [6	.....	.....	.....
Lithgow	200	.....	.....	1,000	.....	10,000 0 0	30,000	

The following information has been obtained by the Wardens and Mining Registrars respecting certain parcels of Wash-dirt which have been puddled, sluiced, or crushed during the year 1879, and the quantity of Gold produced therefrom.

District and Division.	Name of Company.	Locality.	Quantity.	Average yield of Gold per ton.	Total yield of Gold.	Depth of Workings.
BATHURST DISTRICT— Carcoar Division.....	Brown's Creek Gold-mining Co.	Brown's Creek	27,143	0 3 1'16	0 3 1'16	100 ft.
Bathurst Division	Thos. Lane & party	Gully Swamp	268	1 16 17'19	492 0 0	212 "
Orange Division	McDonald Bros.	Wood's Flat	500	0 3 7'68	83 0 0	60 "
	Carney & party	Forest Reefs.....	2,000	0 8 0'00	800 0 0	100 "
TAMBARORA AND TURON DISTRICT— Ironbarks Division.....			29,911	0 3 16'45	5,512 0 0	
	Balling & party	Bald Hills, Muckerawa	275	0 10 23'2	151 0 0	160 "
	Byrns	"	200	0 7 0'00	70 0 0	160 "
			475	0 9 7'32	221 0 0	
LACHLAN DISTRICT— Forbes Division	South Lead Gold-mining Co.	South Lead	900	0 4 12'86	204 2 6	232 "
	Hey's Extended Amalgamated Claims.	Bald Hills	700	0 8 7'64	291 3 0	200 "
	Heinke and party's Extended Claim.	Queen's Lead	80	0 5 0'00	20 0 0	118 "
Parkes Division	R. McIntyre	Bushman's	2,500	0 4 12'00	562 10 0	80 to 90 ft.
	"	Shallow Bush	300	0 4 12'00	67 10 0	6 to 12 "
	"	Great Northern	500	0 4 12'00	112 10 0	80 to 100 "
	"	Opossum Gully	1,500	0 4 12'00	337 10 0	70 to 80 "
	"	Sardine Gully	800	0 2 12'00	100 0 0	10 to 70 "
	"	Currajong	200	0 4 12'00	45 0 0	10 to 20 "
	Millender's	Bushman's	500	0 4 0'00	100 0 0	70 to 80 "
	"	Opossum Gully	200	0 4 0'00	40 0 0	60 to 80 "
	"	Great Northern	300	0 3 12'00	52 10 0	80 to 100 "
	Hocking & Pascoe	Fulton's Lead	20	0 6 12'00	6 10 0	Surface to 60 ft.
	"	Welcome	1,400	0 3 12'00	245 0 0	" 14 "
	Jerry Parry	Ben Nevis	1,300	0 7 12'00	487 10 0	80 to 100 "
	E. Bray	Welcome	2,500	0 4 0'00	500 0 0	100 to 110 "
	"	Fulton's Lead	200	0 6 0'00	60 0 0	45 ft.
	"	Frenchman's	150	0 3 0'00	22 10 0	10 to 12 "
	"	Richardson's	300	0 4 0'00	60 0 0	35 ft.

Yield of Gold from Wash-dirt—continued.

District and Division.	Name of Company.	Locality.	Quantity.	Average yield of Gold per ton.	Total yield of Gold.	Depth of workings.
LACELAN DISTRICT—contd.						
Parkes Division—contd.	McDonald's	Well-ried	tons.	ozs. dwts. grs.	ozs. dwts. grs.	
	"	South Lead	150	0 3 0'00	22 10 0	12 to 18 ft.
	Fred Matthew's	Frenchman's	220	0 7 0'00	77 0 0	116 to 123 "
	"	Paddy's Flat	150	0 3 0'00	22 10 0	8 to 9 "
	Edward Draper	Reed's Gully	400	0 0 12'00	10 0 0	8 to 9 "
	"	No Mistake	100	0 4 0'00	20 0 0	70 to 90 "
	G. Draper	North Bushman's	200	0 4 12'00	45 0 0	surface.
	"	"	400	0 0 12'00	10 0 0	60 to 80 "
	"	"	100	0 1 0'00	5 0 0	70 to 80 "
	Nichols	No Mistake	300	0 3 0'00	45 0 0	70 to 80 "
	J. Mann	"	200	0 2 0'00	20 0 0	100 ft.
	Sundry miners	Seven-mile Gully	350	0 3 0'00	52 10 0	84 "
Grenfell Division	Dodd & party	Quondong Gully	870	0 6 0'00	261 0 0	200 "
	Archer & party	Two-mile Gully	100	0 3 12'00	17 10 0	190 "
	Eager & party	"	70	0 4 12'00	15 15 0	190 "
	Kear & party	Milkman's Gully	15	0 5 0'00	3 15 0	150 "
			79	0 4 17'92	18 15 0	
			18,054	0 4 9'29	3,960 10 6	
SOUTHERN DISTRICT—						
Araluen Division	Crown Sluicing G. M. Co.	Araluen	3,100	0 0 13'35	86 4 16	20 ft.
Major's Creek Division	J. B.	Long Flat	1,040	0 0 0'00	13 0 0	from 1 to 12 ft.
	H. G. & Sons	"	312	0 2 0'00	31 4 0	"
	D. P. & T. W. B.	"	250	0 4 0'00	50 0 0	"
	H. G. & J. E.	"	364	0 2 0'00	36 8 0	"
	W. S. & W. F.	"	312	0 4 0'00	62 8 0	"
	J. B. & Son	"	520	0 2 0'00	52 0 0	"
	J. T. & C. B.	"	1,560	0 0 12'00	39 0 0	"
	Thomas Wisbey	"	1,300	0 0 12'00	32 10 0	"
Little River Division	Robert Huff	Mosquito Flat	4,000	0 0 6'00	50 0 0	1 to 6 ft.
	Mary Brice	Eagle Hawke Gully	1,000	0 0 18'00	37 10 0	1 to 6 ft.
			5,014	0 0 5'00	52 4 14	
			18,772	0 0 13'87	542 9 6	

Yield of Gold from Wash-dirt—continued.

District and Division.	Name of Company.	Locality.	Quantity.	Average yield of Gold per ton.	Total yield of Gold.	Depth of workings.
PEEL AND URALLA DISTRICT						
Nundle Division.....	J. Henderson & J. W. Rowe	Mount Pleasant	Tons.	oz. dwts. grs.	ozs. dwts. grs.	.....
Barraba Division .....	.....	Faling Yards, Tea-tree Creek.	300	0 5 4'80	78 0 0	.....
			1,000	0 8 11'52	424 0 0	.....
			1,300	0 7 17'35	502 0 0	.....
NOT WITHIN A MINING DISTRICT—	Robert Lovie & party	Urana Gold-field	185	0 4 20'75	45 0 0

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Summary.

QUANTITY of Gold obtained from certain parcels of Wash-dirt puddled, sluiced, &c., during the year 1879, showing the average yield of Gold per ton.

District.	Quantity.	Average yield of Gold per ton.	Total yield of Gold.
Bathurst District	Tons.	ozs. dwts. grs.	ozs. dwts. grs.
Tambaroora and Turon	29,911	0 3 16'45	5,512 0 0
Leachlan	475	0 9 7'32	221 0 0
Southern	18,054	0 4 9'29	3,950 10 6
Peel and Uralla	18,772	0 0 13'87	542 9 6
Not within a mining district.....	1,300	0 7 17'35	502 0 0
	185	0 4 20'75	45 0 0
	68,697	0 3 3'34	10,782 19 12

The following information has been obtained by the Wardens and Mining Registrars respecting certain parcels of Quartz crushed during the year 1879.

District and Division.	Name of Company.	Locality.	Quantity.	Average yield of Gold per ton.	Total yield of Gold.	Depth of Workings.
BATHURST DISTRICT— Tuena Division	Victoria Company	Junction Point.....	Tons. 44	ozs. dwts. grs. 0 10 7 63	ozs. dwts. grs. 22 14 0	200 ft.
	Robert Smith & Co.....	Dark Corner.....	120	0 15 20 00	95 0 0	120 "
	Hurley & Co.	Sunny Corner	200	0 6 0 00	66 0 0	200 "
	Frederick Robertson	Mitchell's Creek	220	0 7 0 00	77 0 0	100 "
	Curnow & party	Dark Corner	69	0 16 22 95	58 10 0	150 "
			653	0 9 14 22	313 4 0	
TAMBAROORA AND TURON DISTRICT— Hill End Division	Brown's Tribute	Hawkins Hill	181	1 0 0	181 0 0	180 "
	Cornish Company	"	905½	0 6 0	271 13 0	280 "
	Weir & Company.....	"	16	3 0 0	48 0 0	
	Paxton's Tribute	"	174	0 18 0	156 12 0	150 "
	Ackermann & party	"	16	2 0 0	32 0 0	
	"	"	5	23 0 0	115 0 0	
	"	"	6	3 0 0	18 0 0	
	Cock, Attwood, & Co.'s Tribute	"	241½	0 8 0	96 12 0	
	Cornelian Co.'s Tribute	"	121	0 5 0	30 5 0	
	Campbell & Co.	Red Hill	47	0 4 0	9 8 0	180 "
	Water Works	"	48	0 15 0	36 0 0	90 "
	Bridges & party	Washing Gully.....	18½	0 5 0	4 12 12	
	Jeffree & party	"	15½	5 0 0	77 10 0	
	T. Burns & party	Golden Gully	62	0 13 0	40 6 0	90 "
	"	Red Hill	93	0 8 0	37 4 0	200 "
Sofala Division	Letcher & Co.	Tambaroora Road	66	0 12 0	39 12 0	150 "
	Magnet & Co.	"	132	0 10 0	79 4 0	80 "
	Marshall Bros.....	"	30	0 2 0	15 0 0	
	Henshaw & Co.	Tambaroora	17½	0 13 0	53 6 0	
	Wade & Co.	Surface Hill	82	1 11 16 39	36 8 17	Surface veins.
	Moyle's Surface Hill G. M. Co.	O.K.	23	2 8 21 65	100 5 0	30 ft.
	Mini Co.	"	41	2 4 20 42	52 14 0	30 "
	Williamson & Co.	"	23½			

YIELD of Gold from Quartz—continued.

District and Division.	Name of Company.	Locality.	Quantity.	Average yield of Gold per ton.	Total yield of Gold.	Depth of Working.
TAMAROOBA AND TURON DISTRICT—continued— Sofala Division	Frenchman's Co.	O.K.	Tons. 59	ozs. dwts. grs. 0 12 17 08	ozs. dwts. grs. 37 10 0	40 ft.
	Grice & Clarke	"	70½	0 14 17 36	51 18 0	70 "
	Grice & Butcher	Whelan's Hill	86	0 16 13 88	71 5 18	30 "
	Beath & Co.	Bullock Flat	14½	0 12 1 05	8 15 0	40 "
	Dunleavy & Co.	Surface Hill	54	0 7 0 88	19 0 0	Surface veins.
	Mitchell & Co.	"	15	1 0 23 00	15 14 9	"
	Sundry crushings	"	33½	0 11 3 40	28 13 8	"
	H. Sandon's	Golden Chain Reef	61	0 4 15 14	14 2 12	"
	Davis & Mannell	Red Hill	11	23 5 14 00	256 1 10	10 ft.
	Houston & party	Trickett Reef	195	1 10 0 00	292 10 0	40 to 166 ft.
Ironbarks Division	Drear & party	Drear's Reef	256	0 15 10 50	197 12 0	140 ft.
MURDERE DISTRICT— Wellington Division	Kaiser	Mitchell's Creek	3220½	0 15 14 92	2515 9 14	
	Mitchell's Creek Mine		867	0 8 13 02	370 6 12	30 "
		Lincoln	879	1 3 10 46	1041 0 0	350 "
LACHLAN DISTRICT— Parkes Division			1746	0 16 3 99	1411 6 12	
	Bonnie Dundee	Parkes	300	0 5 8 00	80 0 0	130 "
	No. 1 Extended Claim	"	191	0 2 12 00	23 17 12	135 "
	Medlyn & party	"	80	0 11 6 00	45 0 0	
	Jansen & party	"	220	0 15 0 00	165 0 0	145 "
	Christmas Reef Co.	"	28	0 15 0 00	21 0 0	
	Caledonian Co.	"	9	0 5 12 00	2 9 12	
	Bothwell & party	Currajong	42	0 9 6 00	19 8 12	4 to 20 ft.
	Vinding & Co.	"	6	0 11 0 00	3 6 0	6 to 25 "
	Hackett & Co.	"	6	5 0 0 00	30 0 0	6 to 20 "
	Leighton & Co.	"	31	2 0 0 00	62 0 0	15 to 20 "
	Dayspring	"	52	0 10 0 00	26 0 0	15 ft.
	Hudson & Co.	Happy Valley	30	0 4 0 00	6 0 0	25 "

YIELD of Gold from Quartz—continued.

District and Division.	Name of Company.	Locality.	Quantity.	Average yield of Gold per ton.	Total yield of Gold.	Depth of Workings.
LACHLAN DISTRICT—contd.— Grenfell Division	Quinn & party	Welcome Hill	Tons. 57	ozs. dwts. grs. 0 9 0'00	ozs. dwts. grs. 25 13 0	120 ft.
	Hinchliffe & party	Lawson's Hill	78	1 10 0'00	117 0 0	6 "
	Fitch & party	Lucknow Hill	112	0 13 22'28	78 0 0	100 "
	Veal & party	"	72	0 8 0'00	28 16 0	80 "
	Mitchell & party	Homeward Bound Hill No. 1.	198	0 12 0'00	118 16 0	300 "
	Allsopp & party	Victory Reef	140	0 4 0'00	28 0 0	130 "
	Stiff & party	O'Brien's Reef	35	0 15 0'00	26 5 0	60 "
	Campbell & party	Homeward Bound Hill.	111	0 10 0'00	55 10 0	300 "
	Pettit & party	Enterprise Reef	113	1 0 0'00	113 0 0	200 "
	W. J. Watson & party ..	O'Brien's lease	110½	0 7 23'13	44 0 0	130 "
Cargo Division	Elder & party	Ironclad Range	150	2 4 9'96	333 2 7	
	Clarke & Thomas	Dalcooth Reef	30	1 7 0'00	40 10 0	
			2,201½	0 13 13'45	1,492 13 19	
SOUTHERN DISTRICT— Arakun Division	Various claims	Bell's Creek	215	0 11 3'01	119 12 0	Surface to 60 feet on hill side.
	Noble & Gregson	Last Chance	18	0 15 13'35	14 0 0	
	"	Homeward Bound	40	0 8 0'00	16 0 0	
	"	"	80	0 15 0'00	60 0 0	
	"	Pioneer	128	1 1 0'00	84 0 0	
	"	"	80	0 8 0'00	51 4 0	
	"	"	45	0 10 0'00	40 0 0	
	"	"	20	1 10 0'00	45 0 0	
	Griffiths	Poor Man	16	0 5 12'00	5 10 0	
	"	Golden Crown	23	0 3 8'00	3 0 0	
	"	Charcoal Burners	104	0 14 18'78	17 0 0	
	Eclipse	Poor Man	147	0 5 0'00	26 0 0	
	"	Eclipse	61	0 5 13'87	41 0 0	
	"	"	41½	3 13 18'49	225 0 0	
	J. Guy	Golden Crown	100	0 2 13'47	6 10 0	
Moruya Division		Dwyer's Creek		0 4 19'20	24 0 0	Surface quartz
			1,198½	0 12 13'14	777 16 0	

YIELD of Gold from Quartz—continued.

District and Division.	Name of Company.	Locality.	Quantity.	Average yield of Gold per ton.	Total yield of Gold.	Depth of workings.
TUMUT AND ADELONG DISTRICT— Adelong Division	Challenger Co.	Adelong	762 0	1 5 21'03	985 18 0	689 ft.
	Hodge Bros. and party ..	Donkey Hill	16 10	2 11 0'00	42 1 12	180 "
Tumbarumba Division	Union G. M. Co.	"	20 0	1 18 0'00	38 0 0	180 "
	Just in Time	Victoria Reef	116 0	0 3 2'49	18 0 0	428 "
	R. Beaver and party ..	Wandagga	20 0	1 7 12'00	27 10 0	100 "
	Annetta & Co.	Hillas Creek	25 10	0 16 1'88	20 10 0	25 "
	Band of Hope	Victoria Reef, Adelong ..	357 0	1 3 9'34	417 10 0	835 "
	Duke of Connaught ..	Gibraltar Hill	80 0	1 5 0'00	100 0 0	80 "
	Caledonian G. M. Co.	Donkey Hill	40 0	0 13 5'90	26 9 20	111 "
	Various claims	Williamstown Flat ..	77 10	1 16 22'90	143 4 0	220 "
	Peep o' Day	Adelong	618 0	1 12 5'94	996 9 0	735 to 800 ft.
	Isabella Co.	Tumbarumba	223 0	1 12 22'70	367 7 0	100 ft.
Albury Division	Various claims	Ournie	160 0	1 10 0'00	240 0 0	147 "
	One-tree Hill	"	125 0	0 19 7'68	120 15 0	147 "
Queanbeyan Division	Golden Crown G. M. Co.	Black Range	160 0	1 0 0'00	160 0 0	140 "
Gundaroo Division	Suburban Gold and Diamond Co. (Limited.)	Michelago	180 0	0 7 21'33	71 0 0	60 "
	Masters & Co.	Brooks' Creek	11 0	3 0 0'00	33 0 0	104 "
PEEL & URALLA DISTRICT— Nundle Division	J. P. Robertson & party ..	"	1 8	2 11 17'35	3 13 3	66 "
	T. Mason & party	Opossum Reef	2,992 18	1 5 1'12	3,811 7 11	
PEEL & URALLA DISTRICT— Nundle Division	J. P. Robertson & party ..	Golden Hole	300 0	0 15 0'00	225 0 0	250 ft.
	T. Mason & party	"	4 0	0 5 0'00	1 0 0	150 "
	J. Patey & party	Brown Snake	5 0	0 10 0'00	2 10 0	55 "
	C. B. Anderson & party ..	Black	60 0	2 0 0'00	120 0 0	150 "
	G. Bond & party	"	35 0	2 0 0'00	70 0 0	80 "
	M. J. Stanning	Quachanacha	60 0	1 0 0'00	60 0 0	100 "
	C. B. Anderson & party ..	Gap Reef	12 0	0 13 18'00	8 5 0	140 "
	J. C. Brayshaw	Lady Mary Reef	7 0	0 12 0'00	4 4 0	30 "
	P. R. Company's Estate ..	Hanging Rock	21 0	1 0 0'00	21 0 0	50 "
	J. Porter & Co.	"	150 0	2 15 0'00	412 10 0	500 "
	T. Stevens & party	Marquis of Lorne	15 0	1 8 0'00	21 0 0	70 "
	R. Albury & party	Brown Snake Reef	24 0	1 0 0'00	24 0 0	
	"	New Reef	23 0	1 0 16'69	23 16 0	30 "

YIELD OF Gold from Quartz—continued.

District and Division.	Name of Company.	Locality.	Quantity.	Average Yield of Gold per ton.	Total yield of Gold.	Depth of Workings.
PEEL AND URALLA DISTRICT —continued. Walcha Division.....	Stratton & others	Star Claim.....	6 0	8 12 12'00	osm. dwts. gra. 51 15 0	30 to 70 ft. 150 ft. From tip.
	Maloney & others	Bar Claim	50 0	0 10 6'24	25 13 0	
	Mathison & McIntyre	Tin Reef	24 0	0 18 4'00	21 16 0	
NEW ENGLAND & CLARENCE DISTRICT— Solferino Division			796 0	1 7 10'76	1,092 9 0	30 to 70 ft. 150 ft. From tip.
	Band of Hope	Band of Hope	220 0	0 3 3'08	34 8 6	
	Hall Bros. & Co.	Lion Reef.....	27 0	0 4 10'66	6 0 0	
Boorook Division	R. A. Bertie	"	170 0	0 2 0'00	17 0 0	30 to 70 ft. 150 ft. From tip.
	Hall Bros. & Co.	Shellmeier	3 0	0 2 0'00	0 6 0	
	Martin Sandford & Co.	Pioneer Reef.....	30 0	2 0 16'00	61 0 0	
HUNTER AND MACINAY DISTRICT— Copeland Division		Perseverance Reef ..	100 0	0 4 10'00	450 0 0	30 to 70 ft. 150 ft. From tip.
			550 0	1 0 16'33	568 14 6	
	Lady Belmore	Left-hand Branch ..	362 0	2 13 0'92	960 0 0	
PEEL AND URALLA DISTRICT —continued. Walcha Division.....	No. 1 West do	"	150 0	3 0 0'00	450 0 0	30 ft.
	Centennial	"	146 0	2 5 14'79	333 0 0	
	"	"	282 0	0 17 5'61	243 0 0	
	"	"	27 0	3 5 13'33	88 10 0	
	Driscoll & party (No. 1 South.)	"	58 0	1 0 0'00	58 0 0	
	"	"	10 0	4 10 0'00	45 0 0	
	Lukey & party (No. 2 South.)	"	160 0	3 0 0'00	480 0 0	
	Saxby & party	"	44 0	1 2 0'00	48 8 0	
	Hidden Treasure	"	395 0	2 16 10'33	1114 10 1	
	Gouldry & party (No. 2 North.)	"	22 0	2 0 0'00	44 0 0	
	Phillips & party (No. 5 North.)	"	12 0	1 10 0'00	18 0 0	
	Mountain Maid Reef	"	690 0	4 9 8'00	3082 0 0	
	Murphy & Bayley (No. 1 East.)	"	22 0	3 0 0'00	66 0 0	
	The Melbourne-Reid & Party.	"	45 0	4 0 0'00	180 0 0	

YIELD OF GOLD FROM QUARTZ—continued.

District and Division.	Name of Company.	Locality.	Quantity.	Average yield of Gold per ton.	Total yield of Gold.	Depth of workings.
HUNTER AND MACLEAY DISTRICT—continued. Copeland Division—continued.	The Mechanic Reef—Rowe & Baxter.	Left-hand Branch ...	tons. cwt. 9 10	ozs. dwts. grs. 5 0 0'00	ozs. dwts. grs. 47 10 0	30 to 80 ft. surface 60 to 80 "
	Caledonian Co.....	"	130 0	2 7 9'23	308 0 0	
	"	"	129 0	3 14 6'32	479 0 0	
	The Prince Charlie Reef...	"	190 0	1 8 10'10	270 0 0	
	Brockwell & party (pros- pectors.)	"	142 0	2 5 18'59	325 0 0	
	Rosetta Reef—Easton & Bell.	"	55 0	1 0 0'00	55 0 0	
	The Golden Spur.....	Bowman River.....	10 0	15 10 0'00	155 0 0	
	Christmas Box — Hughes & another.	"	15 0	1 0 0'00	15 0 0	
			3105 10	2 17 2'19	8864 18 1	

Summary.

QUANTITY OF GOLD obtained from certain parcels Quartz crushed during the year 1879, showing the average yield of Gold per ton.

District.	Quartz crushed.	Average yield of Gold per ton.	Total yield of Gold.
Bathurst	Tons cwt. grs. 653 0 0	ozs. dwts. grs. 0 9 14'22	ozs. dwts. grs. 313 4 0
Tambaroona and Turon.....	3,220 10 0	0 15 14'92	2,515 9 14
Mudgee	1,746 0 0	0 16 3'99	1,411 6 12
Lachlan	2,201 10 0	0 13 13'45	1,492 13 19
Southern	1,198 15 0	0 12 13'14	777 16 0
Tumut and Adelong	2,992 18 0	1 5 1'12	3,811 7 11
Peel and Uralla	796 0 0	1 7 10'76	1,092 9 0
New England and Clarence	550 0 0	1 0 16'33	568 14 6
Hunter and Macleay	3,105 10 0	2 17 2'19	8,864 18 1
	16,464 3 0	1 5 7'81	20,847 18 15

WARDENS AND MINING REGISTRARS REPORTS.

BATHURST DISTRICT—BATHURST, OBERON, ROCKLEY, TRUNKY, AND TUENA DIVISIONS.

(*Mr. Warden T. A. Smith, Trunkey.*)

In forwarding you my report, as Warden of the Bathurst District, for the year 1879, I have the honor to state that a very marked improvement has taken place in mining within this district, and I have very great hope that for the future mining will be followed as a business in which the capitalist will join, and bubble companies be a thing of the past.

Trunkey.—In my report for 1878 I stated that there was a good opening for 200 men upon the reefs here. I now repeat that statement, and confidently assert that any men who know how to work reefs can make from 50s. upwards per week regularly here. Only sixteen men have been employed in getting out stone. These have had 430 tons crushed at the Lady Belmore mill, yielding 506 ozs. of melted gold, or about £125 per man.

At Pine Ridge, 8 miles from Trunkey, a lease of Mr. Wilson's has been worked. That gentleman reports:—"I have only been able to work four months of this year; during that time I have obtained 276 ozs. melted gold, and am well satisfied with the return. I have been working my mill by means of water-power."

In alluvial mining I think the gold obtained has been about the same as last year, or perhaps a trifle more. From information received I give the return of alluvial gold as 1,256 ozs., making the total alluvial and quartz gold for the year 1879, 2,038 ozs.

Tuena.—There is no quartz mill here now, therefore reefing is quite at a stand. I have only heard of the Happy-go-Lucky reef having been worked. This is very patchy. At the 25-foot level the workmen, Wilson and Green, say they got very good specimens, even as much as 3 ozs. of loose gold to a dish; probably some day this will be valuable. At Junction Point and Victoria Flat there are quartz mills, one recently erected. Reefing about these places seems to be looking up. The men are very sanguine. Any work done now is legitimate, swindling having had its day here.

From careful inquiry I find that 832 ozs. of alluvial gold have passed through the hands of the local storekeepers for the year. As the Chinese don't sell their gold locally, I think 500 ozs. may fairly be set down as their portion, or say a total from all sources of 1,332 ozs. of alluvial gold.

Peelwood Copper Mine, in this district, has again been started by a party of local men. I hope their enterprise may be rewarded.

Rockley.—Thompson's Creek Copper Mine, in this division, has been kept at work by a few men. The want of furnaces has militated against this mine, but this difficulty will soon be overcome, the property having, I am informed, passed into the hands of capitalists at £5,000.

I have heard of other finds of copper by Messrs. Short & Co., who are prospecting this part. At Native Dog Creek, Caloola, and other places mining for gold is carried on, but nothing beyond wages is obtained.

Oberon.—The Wiseman's Creek Copper Mine has been continuously worked up to 22nd November last, the return being £1,750 worth of copper. The South Wiseman has been idle all the year.

Only two men have been engaged in prospecting for gold; these were at Tuglow, and only obtained 7 ozs. of fine gold.

Bathurst.—I cannot report any new finds of either gold or copper. One gold lease has been taken up at Meadow Flat, near Kirk Connell, but I have not heard of any gold being obtained.

At Mitchell's Creek some work has been done, and the once celebrated lease of Morgan and Wentes has again been taken up.

At Newbridge the iron mine is idle, the original shares (six) having been increased to twenty-four, brought trouble ; the shareholders could not agree. A Supreme Court action is now pending.

The Cow Flat Copper Mine has been leased, and perhaps may again be energetically worked. I believe at the present time only two men are employed. The copper obtained for the year has been £1,100.

In conclusion, I beg to point out that no good has resulted from that portion of the Prospecting Vote expended in the Bathurst Division.

BATHURST DISTRICT—ORANGE DIVISION.

(*Mr. Warden Lane, P.M., Orange.*)

In submitting my usual annual report I regret my inability to state anything very encouraging ; at the same time I believe our gold-mining prospects are more cheering than they have been for some time past.

At Ophir confidence is being evinced in many ways. A few gentlemen are tunnelling into Slator's Hill, and have already reached a distance of 700 feet. The work reflects great credit on the men employed, and it is to be hoped the enterprising projectors will be amply rewarded.

Payable gold from Murray's Hill has been obtained by means of the *race* from above the "Rocks," a distance of some 14 miles by its circuitous course.

Mr. Slator is now cutting a race from the Mullion, and is progressing rapidly with the work. This act alone speaks volumes. Mr. Slator has had every opportunity of forming a pretty correct opinion of Ophir as a gold-field, and if his conclusions were not strongly in its favour he would not embark in so expensive an undertaking. The length of the race will be about 8 miles.

At Surface Hill, near the Junction, some good samples of gold have been procured very lately. I have seen several lots myself, weighing from a few pennyweights up to as many ounces. "Ophir will yet surprise the world."

Two or three parties continue to persevere at Forest Reef. Some gold is procured.

The other localities in my division of the Bathurst Mining District are "*dead*"

The rich find at Lucknow the other day proves there is still gold in these districts.

BATHURST DISTRICT—CARCOAR DIVISION.

(*Mr. Warden E. J. O. North, P.M., Carcoar.*)

In submitting my report for the past year, I have the honor to state that gold-mining operations in the Carcoar Division of the Bathurst District have been much the same during 1879 as in the previous year. About the same number of persons have been engaged in the work, and the yields of gold, as shown by the escort returns, was 4,437 ounces, being within 227 ounces of the yield for 1878 ; but much of the gold obtained at Lumpy Swamp is sold at Orange, and does not therefore appear in these returns.

The Brown's Creek mine still produces the greater part of the gold obtained, whilst the few parties at work at Gally Swamp, Flyers Creek, and Lumpy Swamp appear satisfied with their earnings, and in good spirits as to their future prospects.

At the Frenchman's Reef, on the Belabula River, a small party are at work, who are said to be making good wages. Their machinery is driven by water-power, and although the yield per ton is very small, the expenses of working are so light that the results are satisfactory to the party.

The Old Junction and the Prince of Wales claim at Burnt Yards have remained unworked during the year for want of the necessary capital to carry on operations, but as both claims have turned out large quantities of gold, I have no doubt they will again be successfully worked.

Woods Flat, in the Cowra District, has been almost deserted ; and I regret to say the prospectors, M'Donald and party, who received Government aid for prospecting at Noyeau Gully, in that neighbourhood, were unsuccessful in striking payable gold. They sank four

shafts to depths of from 100 feet to 160 feet, in all 536 feet of sinking, and drove in the aggregate 442 feet, getting the colour throughout, but nothing more.

The prospectors at Wallaroo, who were also to have received Government aid, failed to prosecute the work, and have abandoned the ground.

With a return of wet seasons I am satisfied gold-mining will obtain a fresh impetus in my district, but dry seasons are a great discouragement to miners generally.

Nothing has been doing in the way of copper mining during the year, but I understand the Milburn Creek mine will shortly be at work again, and hope in my next report to be able to give a good account of its success.

BATHURST DISTRICT—BATHURST DIVISION.

(C. E. B. Maybury, Mining Registrar.)

WITH plenty of material to work upon the preparation of a report of this kind is relieved of its greatest difficulty, and rendered merely a work of pleasure. I regret that I am not among the number of those in that happy position, but, unfortunately, the circumstances under which I write are directly opposite in their character, and so limited are the resources at my command that I feel the duty somewhat of a task. During the few years I have had the honor to be connected with the department the mining industry in this district has not at any time assumed proportions of much importance. The past year has proved no exception to the general rule in this respect, and has not witnessed the opening of any new mines, nor any marked extension in operations tending to the further development of those already in existence. Such is the unsatisfactory state of affairs when in the ordinary course of time I am again called upon to furnish a report upon the mining industry of this division. With these few introductory remarks I proceed to the more legitimate part of my duty in detailing such information as I have been able to gather on the subject in hand, and in doing so will deal with the different matters I shall have occasion to notice under the various headings to which they belong.

Gold-mining.

For several years past I have had occasion to remark the great depression that exists within this division in regard to the branch of mining industry now under consideration, and I regret that no improvement has taken place during the past year to afford me an opportunity of relieving the monotony of my reports in this particular. So little interest does gold mining excite in this district, and so low is the importance attached to it, that it is regarded more as a kind of resort by the labouring man when out of other employment than as an industry worthy of his serious and undivided attention; and this is not to be wondered at when we consider that during the greater part of the year employment of a more lucrative character may be readily obtained by those willing to work, and during the harvesting season especially workmen are in great demand, and without difficulty earn their 12s. a day. Small claimholders and prospecting parties constitute the gold-miners of this division, and of these the greater number are Chinese who seem able to live where Europeans would starve. Their operations have been chiefly confined to the gold-yielding localities referred to by me in previous reports, viz.: Stony Creek, Cleer Creek, King's Plains, Glanmire, and Napoleon Reef. Of these the operations at the place first named have been the most important, and have, I believe, been continued without interruption throughout the year. Some thirty or forty men have found constant work, but most of these were Chinese, who are, as I have mentioned above, able to live on less and are content with smaller earnings than Europeans. I have not been able to ascertain the actual amount of gold raised, it being so difficult to obtain such information from the Chinese. At the other places mentioned the operations have not been continuous, and very little has been done.

At Dirty Swamp, on what is known as Egan's property, a new find has been made in alluvial ground. Some six or seven men are at work, and it is said are making very fair wages. The gold is of good quality and commands the highest price current. If operations continue I will endeavour to obtain more detailed information and give full particulars in my next report.

I have on previous occasions stated my belief that there is plenty of auriferous land in the district with indications sufficient to justify a reasonable expenditure of capital in prospecting the same, and only in my last report, I remarked, "If the district could boast of miners more possessed of the spirit of enterprise that would induce to a thorough prospecting of the auriferous portions thereof I might to-day be in a position to furnish important statistics of work performed and results achieved, &c." I have therefore much pleasure in being able to inform you that a movement is now on foot having for its object the further development of gold-mining in this district.

Gold, in small quantities, has frequently been found on the Town Common, adjoining Bathurst, in the vicinity of that part known as the Bald Hills. The matter has lately engaged the attention of Mr. Alfred Chapple, an alderman of the borough, and a practical miner of over twenty years' experience, and his opinion is such that he resolved to take some steps to prospect the ground. Application has been made to the Municipal Council for permission to mine on the common, and the necessary consent has been readily granted, subject, I believe, to the usual provisions. Mr. Chapple has informed me that he has no doubt whatever of the existence of gold in these hills, and he is so far sanguine of its being found in payable quantities as to be ready to invest a fair amount of capital in prospecting the locality. A number of the citizens having expressed a desire to join Mr. Chapple in his venture, that gentleman called a public meeting a few days ago for the consideration of the subject. The meeting was fairly attended, and it was resolved that a Prospecting Association should be formed for the further development of the resources of the district generally, and of the Bald Hills in particular. A committee was formed, with power to add to their number, and it is expected that operations will be commenced at an early date. In my next report I shall perhaps have the pleasure of informing you of the result of the movement now initiated, and my hope is that the extent and importance of the operations may be such as to necessitate the use of a few quires of foolscap in their description. The discovery of gold in payable quantities within such close proximity to Bathurst would result in incalculable benefit to the city and increase the bustle and stir that attends a prosperous community.

I learn from the Gold Receiver at Bathurst that the quantity of gold transmitted by escort from Bathurst to Sydney during the year ending 31st December, 1879, was 2,437 ozs. 11 dwts. 2 grs., being a decrease on the previous year of 352 ozs. 17 grs. The chief part thereof was forwarded by the Managers of the local Banks, who do not state from what localities it is obtained.

Copper.

Copper-mining has been subjected to a great depression during the year by reason of the low price of copper prevailing, the profits being too small to induce the expenditure of any large amount of capital in developing the resources of the district. Matters, however, are now improving. Copper is going up in the market, and there is reason to believe that the year upon which we have now entered will witness a special effort for the further development of our copper mines. I attach the usual details in tabular form, and I beg to record my thanks to Mr. Lewis Lloyd, J.P., of Bathurst, to whose courtesy I am chiefly indebted for these particulars.

Cow Flat Mine.—The work done at this mine during the past year has not been equal to that of previous years. In the quantity and value of ore raised it has hitherto held a premier position among the copper mines situate within this division. From the returns annexed you will observe that during the past year only 220 tons of ore have been raised, yielding, when smelted, twenty tons of copper, of the value of £1,100. On comparing these results with those of the North Wiseman's mine it will be seen that the quantity of ore raised from the latter mine exceeds that from the former by 380 tons, with an excess in the total value of £770. This is in a great measure due to the fact that the level from which ore has been raised for some five or six years is now almost worked out. I understand that Mr. Lloyd, who is largely interested in copper-mining, not only in this district but in various parts of the Colony, is at the present time in treaty for a lease of the mine, and, in the event of arrangements being concluded, he intends to spend a large amount of capital in further sinking the shaft and driving a new level, in the hope of meeting with a rich deposit at a greater depth. Thus there is good prospect of the further development of this mine during the present year.

Belmore Mine, at Cow Flat—The ore is not very rich, and certainly not sufficiently so to pay for raising when copper is low in price. Four men are employed, and 190 tons of ore have been raised during the year. Upon smelting this has only yielded 8 tons of copper, and has been disposed of for £440. The result of the smelting will show the poorness of the ore.

Apsley Mine.—This mine was closed during a considerable portion of the year, and I have heard is about to change hands. Four men have been employed during the latter portion of the year. The quantity of ore raised has amounted to about 60 tons, yielding 7 tons 16 cwt. of copper, valued at £429.

North Wiseman's Mine.—This mine has given employment to ten men. The amount of work done exceeds that of any other mine within this division. 600 tons of ore have been raised during the year, yielding, when smelted, 36 tons of copper, of the value of £1,870. The depth of the shaft is 30 fathoms.

The Northumberland and Green Swamp Mines were closed at the date of my last report, and have not been re-opened.

Thompson's Creek Mine is the most important in the Bathurst District at the present time, and a good deal of work has been done there during the year, but as it does not fall within my division I shall not trespass by making further reference thereto. You will no doubt receive a full report thereon from the Mining Registrar at Rockley.

Iron.

The Iron Mine at Back Creek, now Newbridge.—There is no work doing at this mine, pending the settlement of a dispute with reference to an acre of freehold land adjoining the lease, and forming, I am told, the only outlet from the land held under lease to the Newbridge Railway Station. The lessees have been called upon to show cause why the lease should not be cancelled on account of the non-performance of the labour conditions, and the matter will form the subject of official inquiry by the Warden at an early date.

BATHURST DISTRICT—TRUNKY DIVISION.

(*Thomas Waldie, Mining Registrar.*)

IN SUBMITTING my annual report of this gold-field for 1879, I regret that I am not able to report any improvement on my last; no fresh finds either in quartz or alluvial have been made during the year, and it is quite evident that until capital is brought on to this field we must linger on in the same languid state that we have done for some time; and yet the miners who work on steadily are well paid for their labour, most particularly in quartz-mining, as I will be able to show in crushing returns. There is no doubt a scarcity of water has materially affected the alluvial mining. I have in my previous reports drawn attention to the deposits on the Abercombie River banks, and as a proof of my statements, Chippendale and his mate a few weeks ago washed out 130 ozs. for four weeks' work, which I think is worth recording.

There have been issued from this office during the year twenty-three business licenses, and seventy-five miners' rights, but this does not of necessity show the full number of miners on the field.

In quartz-mining the most of the work has been done on tribute in the Sydney Trunkey Gold-mining Company's ground, and from which some very good returns have been got, varying from 1 to 3 ozs. per ton, some of the larger reefs yielding from 6 to 9 pennyweights per ton, 400 tons having yielded 505 ozs. 15 dwts. 22 grs. I have in previous reports given the value of the machinery, with the number of stamp-heads and the horse-power.

There has not been any alteration either in number or value, unless depreciation from standing idle.

None of the deep shafts in this division have been worked for a number of years, the whole of the workings being in shallow ground, none exceeding 100 feet, but the miners seem well satisfied with the returns.

There is only one crushing machine of ten head at work, and it is only at work occasionally, as you will see by the returns, only 400 tons having been crushed at it during the year.

At the Pine Ridge mine the lode is about 100 feet wide, where there are fifteen head of stamps driven by a water-wheel, and where a good number of men are employed, and from which 2,800 tons have been crushed, giving a total yield of 276 ozs. of gold, valued at £1,004; no doubt the returns from this mine would have been considerably larger, but the scarcity of water at the beginning of the year and the destruction of the dams from the heavy floods in the winter considerably retarded their progress, but there cannot be the slightest doubt this is a first-class property and will repay its spirited and enterprising proprietor, James Rutherford, Esq., of Bathurst, and it is to be regretted we have not a few more men of the same kind in the Bathurst district.

The Penbrooke Reef, which is situated about 6 miles east of Trunkey, is again about to be started under the proprietorship of Mr. J. H. Wilson and Mr. Henry Brown; and as some good payable returns have been got from this mine some few years ago, it is to be hoped they will see their way clear to put a crushing plant on the mine, as that I have been told is their intention.

The returns from this field for 1879 are—

				oz.	dwts.	grs.	
Quartz	...	...	...	505	15	22	from 400 tons
"	...	...	...	276	0	0	from 2,800 tons
Alluvial	...	...	...	912	3	0	
Total	...	...	...	1693	18	22	

BATHURST DISTRICT—TUENA DIVISION.

(*M. Jones, Mining Registrar.*)

WHILE the general state of things is very much the same as in 1878, there is a visible falling off in the quantity of gold for the year 1879, the quantity from quartz being only 22 ozs. 14 dwts.; but there is likely to be an increase in the coming year, several quartz claims having been taken up within the last few weeks.

The Peelwood copper mines having started again, and being managed by working men who understand their business are likely to pay.

BATHURST DISTRICT—CARCOAR DIVISION.

(*W. B. Warner, Mining Registrar.*)

THE year 1879 has been a very uneventful one in connection with the mining industry of this division. Very few new claims have got to work, and only in one instance has a discovery of payable gold been reported. This was in a claim at Gally Swamp, belonging to John Digby, jun., and party, but it turned out to be only a patch.

I am glad to have to report that a commencement has been made in the use of water as a motive-power for crushing purposes in my division. In my annual report for 1876 I referred to the immense deposits of soft auriferous quartz on the Belubula River in the neighbourhood of the old Junction Company's claim. These deposits which are found in steep hills on both sides of the river, were formerly worked by three companies, the ore being crushed by steam-power. The best of the stuff was put through the machines, leaving the bulk behind. The greater part of this will yield 1 dwt. to the ton; and about a year ago a party of five working men erected a water-wheel 20 feet in diameter at the old Frenchman's claim with the view of driving the machinery with water-power instead of steam. They have been working for about six months with nine head of stamps, and are making more than wages. Up to the end of the year now closed they crushed 1,361 tons of stone, which yielded 89 ozs. of gold, or an average of 1 dwt. 7½ grs. to the ton. In the same neighbourhood there are at least half a dozen places where similar results could be obtained by small parties of industrious miners.

The Brown's Creek gold mine still holds the premier position in this district. They have done even better this year than last, as the following table will show :—

	Tons crushed.	Gold.	Average to ton.
1878...	21,584	2,905 ozs. 5 dwts.	2 dwts. 16½ gra.
1879...	27,143	4,137 ozs.	3 dwts. 1½ gra.

Some of the claims at Flyer's Creek and the Forest have during the year been worked out, while others which had gone on working have disposed of the gold obtained in Bathurst or Orange, thus reducing the amount forwarded by escort from the district, which was as follows in the last two years :—

1878	...	...	...	...	4,666 ozs. 10 dwts.
1879	...	...	...	...	4,437 ozs. 4 dwts. 4 gra.

Decrease for latter year

229 ozs. 5 dwts. 20 gra.

Copper.

There are two copper mines in my division, the Coombing park and the Milburn Creek. Neither of these has been at work, but it is probable that the works in connection with the latter will shortly be in full swing again.

BATHURST DISTRICT—ROCKLEY DIVISION.

(*T. O. Cromie, Mining Registrar.*)

OWING to a delay in receiving the annual returns from the manager of the Thompson's Creek copper mine I have been prevented until now from sending down my annual returns to the Under Secretary for Mines, Sydney.

During 1879 I have sold seventy-nine miners' rights, twenty-seven business licenses, and three mineral licenses at Rockley, being a small increase on the previous year.

The only copper mines in this division which are being worked are the Thompson's Creek mine, which has changed hands, and is going to be worked more extensively in the future. Several more hands have been employed since the first of the present year. The prospects are very encouraging in this mine.

The past year, on the whole, has been a dull one here in the mining line. Two 20-acre leases were taken up for asbestos on Stony Creek, some 5 miles east from Rockley, but as yet no work of any account has been done. The prospects are said to be good.

If this district was well supplied with water for ground-slucing purposes there can be no doubt but that there is plenty of ground along the various creeks which would pay fair wages to the experienced miner. As a proof of this, one miner at Caloola Creek, during the past winter, with the assistance of two Chinese, washed out 53 ounces of gold in about five weeks by having a good head of water.

There were only 359 ounces of gold sold in Rockley during the past year ; but this is no criterion of the district, as it is well known that a good deal of the precious metal is sold from here in Bathurst.

BATHURST DISTRICT—ORANGE DIVISION.

(*W. T. Evans, Mining Registrar.*)

THERE is very little mining operations carried on in the Orange Division. Ophir is showing indications of revival. Lucknow has occasional bright prospects, but nothing of consequence results. Forest Reef is, I believe, very nearly abandoned.

BATHURST DISTRICT—OBERON DIVISION.

(*Charles W. Cunynghame, Mining Registrar.*)

THERE has been very little gold-mining this year. There were two men prospecting at Tuglow, but got very little gold. The South Wiseman's Creek copper mine has been idle the whole year. The Wiseman's Creek copper-mining Company stopped work on the 22nd November, and is now idle.

TAMBAROORA AND TURON DISTRICT—HILL END DIVISION.

(A. B. Burne, *Mining Registrar.*)

I HAVE the honour to forward you my annual report for the year 1879. In doing so I very much regret that I cannot report any improvement in the mining industry in this portion of the Tambaroora and Turon Mining District since my last report went in. In one or two claims prospecting deep ground has been carried on with some little success, but as yet the prospect is not sufficiently developed to determine as to whether any good and permanent result will arise from it or not. In Krohman's Amalgamated Company, Hawkins Hill, at a depth of over 600 feet, they struck a vein apparently carrying payable gold. This was about November last. They have already had one crushing, which did not turn out so satisfactorily as they had hoped; but it has been found out that the whole of the vein, which is some 2 feet 6 inches in thickness, did not carry gold. They are now separating the stone; and they estimate that it will yield from 2 to 3 ounces per ton.

The Star of Peace during the past year made a discovery at 700 feet which at one time promised to give a payable result, but having met with a fault in the vein the gold seemed to give out. They are still prospecting at the deep level, as yet without any profitable results. In one or two claims they are making good wages, but in the majority of cases merely prospecting is being carried on with the hope of coming upon good gold. Owing to the very wet winter we had, several parties have met with considerable success sluicing old alluvial ground; and it is the general opinion of practical miners here that if a sufficient water supply can be obtained for sluicing purposes a great number of miners would find profitable employment. There was some slight falling off in the number of miners' rights issued in 1879 as compared with 1878, the number in 1878 being 560, whilst the number issued last year was 551, and 14 business licenses.

The amount of gold forwarded by escort from Hill End during the year 1879 amounted to 9,566 oz. 17 dwts, 16 grs. This does not include some little quantity forwarded down by private hands, but I have not been able to ascertain the amount.

TAMBAROORA AND TURON DISTRICT—SOFALA DIVISION.

(M. Fagan, *Mining Registrar.*)

I HAVE the honor to forward my Report relative to the mining interest in this division for the year 1879. Comparing the returns connected with this field for 1878 with those of 1879, I find a decrease as regards the quantity of gold won, but I observe a great increase in the amount of gold sent by escort from here during the last quarter of the year, owing, no doubt, to the recent rains. With regard to alluvial mining, from which the larger portion of the gold raised in this division has been extracted, I am unable to furnish the required return, as the alluvial mining is principally fossicking in the bed of the Turon, Little and Big Oakey Creeks, and in old and abandoned ground.

The Spring Creek Gold-mining Company have not yet been able to bring their plant on to the ground. It is to be regretted that this company did not commence active operations during the past year, as the mine is believed to be rich, and the fact of a battery being erected at Spring Creek would I am certain give a great impetus to quartz reefing about Sofala.

The Circus Point Hydraulic Company have commenced operations at their claim at Red Hill, near Sofala, but owing to a scarcity of water have been compelled to knock off work. The manager, Captain F. B. Gipps, to use his own words, is certain this claim would give a splendid return if he could only obtain a sufficient water supply. Result of five weeks' labour from this claim,—20 ozs. of gold.

In May last a new reef was discovered by Messrs. Davis and Mannell, on Red Hill, about 1 mile east of Sofala. 11 tons of quartz raised from this reef gave the handsome yield of 256 ozs. 1 dwt. 10 grs. of gold. The lucky owners are now busy sinking a main shaft, and are sanguine of making a speedy fortune.

Several other claims have been taken up on this line of reef, the holders of which have not as yet met with success, although the indications are very good.

Wattle Flat.—The Surface Hill Gold-mining Company.—It is to be regretted that this company have done nothing on their own account during the last year to develop the resources

of this well-known and rich mine. It is to be hoped that they will soon commence to sink a main shaft, so long talked about, and there is little doubt that their doing so would result in important discoveries. Several small parties of tributors have been at work on this mine during the year, the most successful of whom were Butler & Co., who obtained 23 tons of quartz, which yielded 36 ozs. 8 dwts. 17 grs. of gold.

Oakey Creek, the O.K. Line.—The claim of Mini and Vassella still maintains its reputation as one of the richest in the district, being remarkably rich in patches, but from the very hard character of the rock and the nature of the vein it is slow work raising stone. 41 tons from this claim gave the handsome yield of 100 ozs. 5 dwts.

The Frenchman's Line.—Although situated at no great distance from the O.K. line the character of the vein and enclosing strata is quite different. The reef varies in size from 4 to 18 inches, but it requires discrimination in working to obtain payable returns. 59 tons crushed gave 37 ozs. 10 dwts., varying from 1 oz. to 7 dwts to the ton.

Grice and Clark's claim, also in Oakey Creek, has been remarkable for regular yields, varying from 13 to 15 dwts. to the ton, which low average is payable from the softness of the rock and size of the reef. The last crushing was a great improvement, giving 1 oz. 2 dwts. to the ton; total, 70½ tons yielded 51 ozs. 18 dwts.

Whelan's Hill.—A Sydney company hold a large part of this hill under lease; it has, however, been most successfully worked by Messrs. Grice, Butcher, and Clark, as tributors. The auriferous veins are very numerous, very rich in patches, and the rock being soft it affords every facility for raising stone. 86 tons crushed yielded 71 ozs. 5 dwts 18 grs., including the last crushing of 16 tons from a new vein, which yielded 23 ozs. 8 dwts 6 grs.

Gard's Hill.—The reef known as the "Golden Chain," formerly held by a Sydney company, has been taken up under lease by H. Sanden, who has crushed a considerable quantity of mullock from the tips with payable results, and has also greatly reduced the quantity of water in the workings preparatory to regularly working the mine.

Bullock Flat.—Only one party, Beath & Co., have been at work in this locality. 14½ tons of quartz gave 8 ozs. 15 dwts. This stone was obtained from a fine-looking and promising reef, and they have made arrangements to work in a more extensive manner after the new year. The reefs in this locality being easy to work, and more or less auriferous, there is a probability of their being better tried during the coming year.

Box Ridge.—Only two parties engaged in quartz, being Messrs. Cole, in the Shakespeare Reef, and Messrs. Hammond, in the Britannia. The former party have just finished a crushing which yielded 13½ dwts to the ton, which ought to pay small wages, and as they purpose to resume operations after the holidays it is to be inferred that they are satisfied with the return.

Hammond and Son are prospecting in the Britannia. I am not aware that they have come across any payable stone, but as they have applied for an additional 2-acre lease it is very likely that they have got some indications of gold to induce them to do so.

In alluvial things are looking a little brighter at present, and the few men at work are making fair wages.

Back Creek, Crudine.—Elkin & Co. have raised 300 tons of quartz, which they estimate will average at least 1 oz. to the ton. A battery of 10-horse-power, ten stampers, and valued at £1,000, is now being erected in connection with this claim by Mr. H. Price, of the Pyramul, and he purposes to have it ready for work by the end of January, and there is little doubt but when once started a great impetus will be given to quartz reefing in that locality.

I now proceed to show the amount of gold from all sources transmitted from Sofala by gold escort and other means during 1879, viz. :—

					ozs.	dwts.	grs.
For March quarter	...	...	...	...	654	9	9
For June quarter	...	...	...	...	946	6	2
For September quarter	...	...	...	...	421	16	4
For December quarter	...	...	...	...	2,043	2	17
Total by gold escort	...	...	...	...	4,065	14	8
By other means	...	...	...	...	924	0	0

Estimated value of gold won in the division during the year, £18,711 8s. 9d.

Twelve gold leases have been applied for during the year.

The following miners' rights and business licenses have been issued by me during the year :—

Miners' rights	...	...	...	...	...	...	543
Business licenses	...	...	...	...	...	...	24

I enclose herewith a return of all machinery at present in this division ; estimated value of same, £3,900.

TAMBAROORA AND TURON DISTRICT—IRONBARKS DIVISION.

(*S. Y. Smedley, Mining Registrar.*)

I HAVE the honor to submit the annual report from this division.

In doing so I beg to call your attention to the fact that owing to my recent appointment, viz., 19th December, I have not been in a position to note the general business as it occurred, and therefore I have to depend entirely on information furnished me by the miners.

Mining has been extremely dull during the past year, owing principally to the railway works now in course of construction to Dubbo having absorbed all the available labour in the district, many of the miners preferring wages to the uncertainty of gold-digging. The principal quartz-reefs now at work, in fact the only dividend-paying mines ; are Hourston and party, on the Trickett's line. From a return furnished herewith it will be seen they have crushed 195 tons for a yield of $1\frac{1}{2}$ oz. per ton. Drear and party have crushed 256 tons for a return of 197 ozs. 12 dwts. There have been other small crushings during the year, but as the parties have left the district and the claims are abandoned I am unable to obtain reliable returns.

The Bald Hill rush at Mookerawa has not proved by any means payable, and is now almost deserted. Ballings and party who bought out the original prospectors, have washed 275 loads for 151 ozs. Byrns and party, 200 loads for 70 ozs.

There are four crushing machines in the district. The Mookerawa machine has been idle during the past year. At W. Scott's machine, Ironbarks, 406 tons of quartz have been crushed, returning 384 ozs. of gold. H. Boheme's machine crushed 595 tons of quartz, which yielded 133 ozs. 12 dwts. J. Allen's machine at Stony Creek crushed 500 tons for a return of 300 ozs.

There have been no fresh discoveries made during the past year. At the present time the majority of the miners have returned to their usual avocations, and prospecting is now the order of the day.

During the past year 219 miners' rights were issued, and 23 business licenses.

The total quantity of gold dispatched by escort during the year 1879 was 766 ozs. 2 dwts. 2 gra.

MUDGEES DISTRICT—GULGONG DIVISION.

(*Mr. Warden T. A. Browne, P.M.*)

IN furnishing my annual report upon the state and prospects of mining operations in the Mudgees district, I have the honor to bring under your notice the fact; which I record with much pleasure, that the yield of gold during the past year has exceeded that of 1878 by 2720 ozs. 4 dwts. 22 gra.

I am led to believe by this and other circumstances that the district under my charge has entered upon a period of general improvement in the quantity of gold won from different sources, as well as a marked activity in other branches of mineral extraction.

While taking this view of the case, it is encouraging to observe that steam machinery is apparently about to supersede the present costly and in many respects incomplete modes of hand-working which up to the present time have been too generally in use among the mining population for their pecuniary advantage.

The co-operative system, by which a comparatively small body of miners have it in their power to work an auriferous area at once more cheaply and more effectively, is now commencing to be more generally understood and acted upon. By this plan not only is the gold won more cheaply than by the ordinary rude and wasteful methods, but ground comparatively poor may be worked to great and general advantage.

If but the co-operative company can furnish among themselves sufficient capital for the purchase of a steam-engine of moderate power, they cannot make a more economical investment. In the case of a lease or an extended alluvial claim it economises labour in all ways. It pumps the surplus water, and so drains the shaft and drive; it winds up the heavy buckets of earth, auriferous or otherwise; it saws the wood for its own consumption as fuel; and, if an alluvial claim, it performs all the labour of the puddling machine, superseding horse-power and attaining results with greater regularity. It minimises in all forms the human labour required.

The commencement of the year 1879, to which this report specially refers, was marked by so profuse a rainfall and so excessive a flow of water at the lower level, that no fears of short supply were for one moment entertained. The promise of spring was not, however, carried out by the summer, the closing months of which have been unusually arid, in consequence of which all branches of mining industry have somewhat declined, while others, such as sluicing, which is much carried on in the divisions of Windeyer and Hargraves, have perforce come to rather a sudden termination. Could water be secured in all seasons, a very largely increased yield from the highly auriferous localities referred to might be confidently looked for.

Within the sub-districts of Gulgong proper and Home Rule, or Wyaldra, a portion of the Prospecting Vote in aid has been, in my opinion, judiciously expended, although I am as yet unable to point to corresponding results. The mine-works which have been so subsidised—the estimated half of wages and expenses or of the assessed cost of the work to be performed having been granted—have been of such a nature as to require time for completion. In some instances, where the flow of water has been excessive at the lower level, even powerful steam pumps have been unequal to the task of keeping the drift free from encroaching subterranean streams. In some instances the obstacles have been unforeseen and so exceptional nature as to task to the uttermost the skill and energy of the most experienced miners.

This has been particularly and specially the case with the prospecting work at the deep lead at Home Rule known as the David Buchanan, and carried on by the Home Rule Prospecting Association. The shaft, which was commenced in February, 1879, has been worked by a party of twelve men, aided by an eighteen horse-power engine, until the present date, without intermission. So much difficulty has been met with in preventing the incursion of a fine sand drift in the low level that a second shaft will most probably require to be put down. In addition to the above mentioned prospecting enterprise, of which the expense has been partly borne by the Government, a party has lately been equipped by the Mudgee residents and trades-people for the purpose of testing the deposits in their immediate vicinity. They merely seek in this case such indirect advantage as the near neighbourhood of a gold-field always furnishes, and will permit the miners personally concerned to derive all actual benefit from the gold if discovered.

North-west of the shaft of the Buchanan Lead, and situated on the line of the now abandoned Home Rule Lead, is the Good Hope claim, a lease of twenty-five acres, worked on the co-operative principle. On the close of the Red, White, and Blue workings a few of the shareholders purchased the plant and steam-engine, which they transported to its present locality. The party, consisting of twelve, are all working shareholders, and it is believed that they have made reasonable profits since their commencement, and have some of the best paying ground yet unworked. In a northerly direction, in a sandy closely-timbered country, is the Extended claim, known as the Red Lead, situated upon the course of the lead so named. This is a very complete plant, having a powerful engine, which raises the surplus water and utilizes it for puddling purposes in mid air. All the underground work is very well and faithfully done. The run of wash-dirt is said to be promising, and of sufficient quantity to last some considerable time. In this claim there are eighteen shareholders in all, some of whom are represented by half-share men.

As perhaps a larger sum of money has been spent upon the plant and workings of this claim than on those of any other mining property in the district, it is to be hoped that the enterprising shareholders will be fully recouped for their outlay and spirited conduct in at once addressing themselves to the task of deep sinking with the best appliances. For lack of similar provision and foresight some promising speculations have before now in this district been prematurely brought to an end.

On the Lower Black Lead very little work has been done of late years. At No. 23 good indications were obtained towards a run of deep ground to the westward, but the party was not strong enough, pecuniarily, to contend with the water which commenced to threaten the workings.

A commencement has lately been made however, at No. 29, by the prospecting work of Messrs. John Scully and party, who, with the assistance of a portion of the vote in aid, purpose to prove the lower portion of the lead. It is thought that their steam pump will drain the upper claims, and thus tend to render other than their own ground remunerative. From explorations on either side of the prospecting shaft, already slabbled to a depth of more than a hundred feet, it is believed by experienced miners that the true course of the lead is very likely to be reached and proved at this particular spot.

On this lead the now abandoned lease of No. 44, is believed to have been prematurely relinquished, as a considerable depth of wash-dirt was reached, and unusually good prospects got from time to time.

At Budgee Budgee payable gold was procured by Messrs. Loban and party in a prospecting shaft receiving Government aid, since when other claims have bottomed on good wash, on apparently the same run. The land in the neighbourhood of this gold-field is generally auriferous, and as much may be said of the whole of the region between the spurs of the Main Range and the Pipeclay, Bara, and Lawson Creeks. Unfortunately for the miner the deposits are either poor or patchy in too many instances, and a steady yielding gold-field in the locality has yet to be discovered.

In several of the conditional purchases near Budgee Budgee gold was discovered, and permission granted by the Minister for Lands, under the 14th clause of 25th Vic. No. 1, to applicants to mine thereon. But in no instance was the search so successful as to lead me to recommend to the Government, as in the clause referred to is provided, that the land should be resumed upon compensation to the purchaser.

In April of the past year one of the most important discoveries of the season was made by Messrs. Nolan and party of the Cornstalk Lead, generally known as the Cooyal rush. This alluvial lead is situated in a broad slightly deepening flat, lying between the slope of the Main Range, and trending in a south-easterly direction towards the Cooyal Creek.

The sinking was from 12 to 30 feet, through a species of close granitic cement. No great difficulty was experienced in sinking, and more than half-an-ounce to the load was readily obtained. In a short time some hundreds of people were attracted to this spot, and sanguine anticipations were indulged in of a large and important gold-field. But the run of gold, though tolerably good, was limited, and it soon became apparent that it could not be traced beyond a dozen claims. At present there are six or seven claims on gold, and some of these are said to be much above the average.

Water for puddling purposes is obtained in dams, and from 1,500 to 2,000 loads are said to have been puddled in all, averaging about 12 to 15 dwts. to the load. The prospectors' claim, as is but equitable, is stated to be the best claim on the lead.

It is by no means certain that another good run of gold may not be traced in the locality, and several smaller finds at Wall's Creek and elsewhere near hand have been reported.

The environs of this lead are studded with granite boulders, and large masses and pinnacles of this rock occur at intervals between it and Budgee Budgee, which is distant about 10 miles.

On the south-west bank of the Cooyal Creek very deep ground has been tried by the miners from time to time, but though good prospects have been obtained the water has always proved the insuperable difficulty. Could that be overcome without an expenditure prohibitory to the working miner the Cooyal district would be a populous and prosperous mining centre.

The large auriferous mountain areas, known as the divisions of Windeyer and Hargraves respectively, while they have not more than ordinary yields of gold to show in 1879, have not conspicuously fallen behind the amounts in former years. The miners who work the river bars, and occasionally, when the head waters serve, repair the ancient "races," which at one time intersected the valleys and hill-sides in all directions, are almost in equal proportion, European and Chinese. Occasionally they come across a deposit of exceptional richness, but in general

are satisfied with ordinary mining wages, or a trifle beyond. Many of the solitary miners, however, who have lived for years in the small orchard-girt cabins on the river points are known to save money. One of the fraternity who died but a short time since had a deposit bank-receipt upon him for more than £100. The salubrity of this elevated region, coupled with the permanence of the ordinary water supply, no doubt tends to a resident mining population. And nowhere is the miner's abode so uniformly encircled by a productive vegetable and fruit garden as on the Meroo and its tributaries, or Louisa Creek.

Sluicing is a feature of these divisions which has formerly been highly productive as an investment, and may again if a cycle of wet seasons recurs. Comparatively large areas of the "points" and creek flats would doubtless pay for thorough and comprehensive treatment; and, indeed, a few years since capital was devoted to such enterprise; but in ordinary summers, such as have obtained in late years, the mountain-torrents disappear, and the rivers and creeks fall below the level at which they can supply the water-races.

The mining population must, though considerably scattered, reach a total of seven or eight hundred souls, when it is considered that the number of miners' rights, as per schedule attached, falls but little short of 500. These licenses, as well as more for business purposes, are held indifferently by Chinese as well as Europeans. The former, as storekeepers, gardeners, and peddlers, are in excess of the latter.

In all of the lesser water-courses, notably Clarke's Creek, Campbell's Creek, Long Creek, and others, and on their often narrow alluvial flats, gold is obtained in larger or smaller quantities. Nearly £100 worth of coarse gold was obtained by Mr. J. Cremor from his race at Campbell's Creek in a comparatively short time, some of the larger pieces weighing several ounces. If the area—twenty-five acres—could be worked with the aid of machinery, it is highly probable that good dividends might be procured. Only one engine of late years—that of Mr. T. E. Mills—has been used upon the Upper Meroo.

Some dissatisfaction has resulted from difficulties being thrown in the way of the miners availing themselves of the undoubted right to dig and search for gold upon lands alienated since the proclamation of the district as a gold-field.

In the Wellington Division attention has been lately drawn to the cupriferous lodes, both in the vicinity of Mitchell's Creek, Lincoln, and the near neighbourhood of the town itself. The completion of the railway during the next ensuing month will no doubt stimulate enterprise in this direction, regard being had to the consequent facilities for the cheap transmission of ore and other mineral concomitants.

Although neither the Kaiser Company nor that of the Belara Lode have made a move in the direction of copper extraction during the past year, signs are not wanting that these and other well-defined lodes may be tested at no distant date.

It is well known that numerous other mineral indications exist in the richly-metalliferous region around Wellington, even as near as the town common, where a copper lode has lately been discovered. These may attract the attention of investors as soon as the better-known properties commence to employ labour.

With respect to the gold won during the present year in the division of Wellington, the amount sent by escort has varied but little from that—about 3,000 ozs.—forwarded in the years 1877 and 1878. An increase would, in my opinion, have been shown had not the Kaiser Company, partly from causes unconnected with mining, relinquished crushing for some months. That company has, however, put through its machine lately about 800 tons of quartz, which has averaged over 9 pennyweights to the ton all through; also a trial crushing for Mr. Charles Cowan's reef in the neighbourhood, of about 50 tons, which went satisfactorily.

The Mitchell's Creek Reef proprietary has several hundred tons of stone at grass, a portion of which is from the 300-foot level. This excellent and well-managed mining property is still worked on tribute, and promises to furnish dividends for years yet to come. The pyrites from this mine are thought sufficiently valuable to pay for exporting to Britain, where scientific treatment of the most advanced degree is attainable. I trust that this may be the precursor of still larger shipments, or that colonial appliances may shortly preclude the necessity.

The alluvial rush within a few miles of Wellington, known as Jawbone, has been comparatively abandoned of late years. Not far off, too, was the well-known reef the Golden Note,

but, as is commonly the case near ancient workings, a few miners still linger, and while ensuring for themselves wages occasionally fall across encouraging finds.

In this locality the parties of Mr. Charles Cowan, a veteran Lachlan and Gulgong miner, and Hammond and party have been at work with varying results for more than eighteen months. They have sunk shafts on a creek running into that of Mitchell's, and have also made dam-races and other mining improvements.

Unluckily for them a conditional purchaser named Knowles applied for this land on the very day that it was proclaimed to be reserved for gold-mining purposes. After the conditional purchase had been proclaimed void, the official veto has been removed and the selector has been restored to all his privileges, which he naturally holds to collide with those of the miners. There yet remains to them the right to apply for permission to dig, under the 14th clause.

The Mudgee Division has not been characterized by exceptional activity, although it stands credited with the very respectable amount of 6,356 ozs. won during the past year, as compared with 4,331 ozs. 19 dwts. 17 grs. in 1878. A number of small diggings make up the total, to which of course the yield of Dog Paddock has materially added.

Still this speaks well for the permanent resources of the district, and a revival may yet be hoped for which shall render Mullamuddy and Apple-tree Flat the busy places which they were of old.

In the Crown Lands to the south of Pauling's paddock a few claims are still working, and indications are plentiful of a run of gold between the range and the river.

It is to be hoped that the prospecting party equipped by the townspeople of Mudgee may be successful. The reefs in the direction of Cudgegong Common are still unworked, though a lease was taken out but lately for one of them. Work has not as yet been commenced. The plant and portions of the machinery of the Cinnabar Company are still in *statu quo*, which is unfortunate, as the indications were most promising.

The quartz reefs in the vicinity of Gulgong, though somewhat promising at the commencement, have not as yet made successful progress, and yet there are several which promised fairly at the first and several subsequent crushings. But as the middle distance was reached the auriferous stone always apparently became gradually and yet more gradually short of the precious metal, until, in spite of the sanguine constitution of miners, the quartz was voted strictly unprofitable.

In this category must be named the Lady Belmore Reef, which, at Rapp's Gully, about 7 miles east of Gulgong, was worked some years since. The reef was nearly 100 feet thick, and the affair paid dividends in spite of heavy expenses incurred in carting and crushing. It was finally abandoned, owing to the disproportionately high charges for all labour connected with the affair.

The same statement applies to Chappell's old Gulgong Reef, the Lucknow, the Louisiana, the Mariner's, and the Welcome Reef, all originally most promising. Opinions are divided as to whether all the reefs in the vicinity are merely auriferous and payable near the surface, to become barren as they deepen, or whether deep shafts and crosscuts would discover the missing link.

In conclusion, I would merely beg to draw attention to the fact of the marked increase of the gold won in the Mudgee District generally as compared with that of the previous year. With respect to Hargraves and Windeyer, I am of opinion, as are also the Mining Registrars for those divisions, that the quantity of gold is considerably under-estimated, the reticent habit of the Chinese miners evading our present means of gaining accurate information.

The number of miners' rights and business licenses shows also a marked improvement, denoting that the gold-mining industry is neither stationary nor languid.

Surveying this extensive district as a whole, and observing the indications so plainly visible throughout its entire area, I am less than ever disposed to lose faith in its ultimate mineral importance, or to recommend the wholesale alienation of land which, to the general public, as well as to the mining community, may eventually prove inestimable.

Return of Gold forwarded from the Mudgee District by Escort during the years 1878 and 1879:—

	1879.			1878.		
	oss.	dwt.	grs.	oss.	dwt.	grs.
Gulgong	7,504	11	2	6,488	9	23
Mudgee	6,356	0	0	4,331	19	17
Wellington.....	2,900	0	0	3,098	4	4
Hargraves	1,385	11	2	1,466	12	8
	18,145	11	2	15,385	6	4

Return of Miners' Rights and Business Licenses issued during year 1879:—

	Miners' Rights.	Business Licenses.
Gulgong	481	40
Mudgee	165	7
Wellington.....	53	1
Hargraves	198	13
Windeyer	243	27
	1,140	88

MUDGEE DISTRICT—GULGONG DIVISION.

(H. De Boos, Mining Registrar.)

I HAVE the honor to forward herewith my report for last year. In regard to the statistics of the work performed in this district I regret to say that I am unable to furnish anything of a reliable nature.

Mining matters in the Gulgong Division have been rather dull during the past twelve months, although they show some improvement on the previous year. The first six months were characterized by a somewhat unusual briskness in mining business; but during the latter part of the year it dwindled down to below even the average. Many of the most experienced miners have left the district, and the news of the discovery of any new gold-field generally has the effect of decreasing our mining population. Notwithstanding these drawbacks the gold returns for the Gulgong Gold-fields for 1879 show a considerable increase over the returns for 1878.

In January a party of fossickers came upon payable gold in Happy Valley, and some claims were taken up and worked with favourable results; in fact, a number of miners appear to find remunerative employment in working the old ground in Happy Valley and the Black Lead, and two or three parties have been receiving good dividends.

In Rouse's Paddock at Guntawang some thirty or forty men are at work and earning more than average wages.

Nolan and party reported the discovery of payable gold at Cooyal in May, and something like a rush took place. There are a good many on the ground who are getting fair wages, and a few are doing well.

In August last Parker and party were again fortunate enough to hit upon another quartz leader on the old Surface Hill, close to their former discovery last year, and have been working it ever since with good results.

A party of miners have been working a 25-acre lease at Home Rule. It forms a portion of the unworked Home Rule Lead which had been abandoned in consequence of the flow of water proving too much for the miners who were formerly employed in working the lower end of the lead. The present occupiers have erected steam machinery of sufficient power to pump the water from the workings. Their industry and expenditure have been rewarded, as the mine is said to give the shareholders a dividend of £6 each per week.

The Co-operative Claim, Red, White, and Blue, situated in Blackman's Paddock, Home Rule, in the working of which steam machinery was employed, has been abandoned, the shareholders being, in mining parlance, "duffered out."

An extended claim in abandoned ground, known as the Red Lead, is being worked by a co-operative company, who have erected steam machinery, and are now engaged in washing the drift. They are reticent as to the yield of gold, and I find it difficult to obtain correct information regarding it.

At the David Buchanan a deep shaft has been sunk by Messrs. Paul and others, who have obtained aid from the fund voted by Parliament for prospecting purposes; the sinking has reached a depth of about 200 feet. Much difficulty in carrying out the work has been experienced, in consequence of a heavy drift of water being met with before bottoming the shaft. It is to be hoped, however, that the party will be enabled ultimately to thoroughly test the ground.

The Star Lead Company, also working with Government aid, after sinking to about 195 feet, applied for permission to suspend work, for the purpose of obtaining a more powerful engine. The application was granted by the Warden for the term of one month. The work was never resumed, and is now entirely abandoned, the engine and plant having been removed from the ground, which still remains untested.

The Black Lead prospecting claim (John Scully's) commenced work in November last in an abandoned shaft, which has been enlarged, slabbed, and centred in a most substantial manner, to the depth of about 80 feet. It is to be hoped that this work will be thoroughly carried out, as in the opinion of many capable of judging it will be the test as to whether the deep ground on this lead is worth working or not.

The number of miners' rights issued during the year was 481. This by no means affords a correct idea as to the number of persons engaged in the pursuit of gold-mining in this portion of the district. Many who have been so employed have claims on private ground, and therefore do not require a miner's right, while others who are fossicking in the old leads are either too poor or too careless to obtain them until they find a payable claim.

Forty business licenses were issued during the past year.

The quantity of gold sent from Gulgong by escort during 1879 was 7,504 ozs. 11 dwts. 2 grs.

MUDGEES DISTRICT—MUDGEES DIVISION.

(*Francis Isaacs, Mining Registrar.*)

THERE has been a decided improvement in alluvial mining during the past year, especially the last two or three months. There are no metalliferous or mineral deposits or quartz reefs being at present operated upon within my division. Alluvial mining is for the most part carried on by fossickers, private property such as Apple-tree Flat, the Log Paddock, Rouse's Paddock, and selections under the 14th section of the Crown Lands Act are the principal scenes of operation. Some good gold has been won at various times during the year from entirely new ground, which has led to the initiation of a Prospecting Company, including most of the principal people of the district, and good results are anticipated. The chief alluvial workings have been carried on at Cooyal, Budgee Budgee, Apple-tree Flat, Log Paddock, Merrendee, Rouse's Paddock, the Merroo, and Pipeclay.

Cooyal.—Very good prospects have been obtained, and two small rushes have taken place during the year; at one time from 80 to 120 men were at work, but there are now four claims only on payable gold, one returning from £10 to £13 per week per man. There is without doubt a rich lead in the vicinity, but the gold is patchy.

Budgee Budgee.—Payable gold has been reported here within the last three months by Caccioni and party; 8 dwts. to the load has been about the average yield; others around have obtained good prospects.

Pipeclay.—This place is generally talked of as the future gold-field of this district. It is mostly the property of the representatives of the late N. P. Bayly, but good gold has been obtained on Government land. Although the colour can be obtained anywhere over a large area of country the gold is so scattered that it is not worth working; prospecting is carried on, and a few parties have done well during the year.

The Merroo and Merrendee.—The Merroo appears to be pretty well worked out; a few Chinese and Europeans have been making good wages as fossickers, and there are still a

number of miners at work. Merrendee, I think, will turn out well. I have been able to obtain little reliable information as to the yield. There are several parties prospecting, and gold has been obtained by some selectors.

Log Paddock, Apple-tree, and Rouse's Paddock.—These are mostly private property; the yield has been about 1 oz. to the load. I have known old ground at Apple-tree worked during the past year with success, one miner obtaining 18 ozs. in three weeks, which shows that a large portion of Apple-tree has never been properly worked (that is the portion on Government land).

MUDGEY DISTRICT—HARGRAVES DIVISION.

(T. O'Brien, Mining Registrar.)

IN conformity with the request contained in your letter of the 27th November last, I herewith submit my report for the year 1879. The alluvial mining is in a languishing state at present, no new ground having been discovered during the past year. Miners are now working old and abandoned ground for the third time, which pays but poor wages, and that only during the wet season, ground sluicing and puddling being the mode of extracting the gold in vogue in this division, which operation requires a good supply of water, which is very rarely seen in this locality during the summer months.

There has been nothing done in the quartz reef mining during the past twelve months, although many of the old miners here say there are several gold-bearing quartz reefs in this neighbourhood, but that it will require capital to develop them.

198 miners' rights and 13 business licenses have been issued during the past year; this does not represent all the miners in this division, as many of the Chinese fossicking are that poor that they could not pay for a miner's right. There was more than twice the above number of miners' rights and business licenses issued from this office in 1878, but the falling off is owing to this division being divided. A Warden's Court having been established at Windeyer, 7 miles from here, necessitated the appointment of a Warden's Clerk and Mining Registrar for that place, which place half of this Division as also it does half or more of the mining population.

MUDGEY DISTRICT—WELLINGTON DIVISION.

(Fred. Marsh, Mining Registrar.)

IN forwarding the accompanying papers, and in submitting my report for 1879 on the state of the gold-fields in the Wellington Division of the Mudgee Mining District, I have the honor to state that mining has been principally restricted to the old workings, no new discoveries having been made possessing any merits worth mentioning. Prospectors have, however, been at work testing the most promising places about the district, but with a result which may be perhaps best shown by the total yield of gold won.

The want of surface or storm water is still the great difficulty which the alluvial miners have to contend against—the crushing plants being of course erected where permanent water exists, and which is raised at the cost and erection of valuable machinery.

The latter part of the summer has been very dry, and so very warm that evaporation very quickly dried up whatever surface water was left by the spring rains.

Although I have not got it in my power to record any very large finds of gold, still I think that mining interests maintain a very fair position in this division, the total quantity of gold won for 1879 being 2,900 ozs. 0 dwts. 14 grs.; and a reference to my last report will show that this quantity is very little short of what was won for 1878.

From the enclosed papers it will be seen that the quantity of reef gold obtained from the two quartz-crushing companies in this division—viz., the Mitchell's Creek Gold-mining Co. and the Kaiser Gold-mining Co.—is 1,411 ozs. 6 dwts. 12 grs., which leaves 1,488 ozs. 14 dwts. 2 grs. which may be assumed to have been obtained from alluvial and sluicing operations. I may here mention that nearly the whole of the reef gold has been obtained from the Mitchell's Creek Gold-mining Co., the Kaiser having worked, I am given to understand, only a short time.

I now show the amount of gold obtained from different sources, and transmitted from Wellington by gold escort during 1879, viz. :—

	ozs.	dwt.	grs.
For March quarter.....	210	3	12
For June quarter	1,320	16	0
For September quarter	575	9	8
For December quarter	793	11	18
Total.....	2,900	0	14

The alluvial gold has been obtained from the places already mentioned in my last report; but I may state that I have been informed that a quantity of gold obtained from the Woolamin and that portion of this division has been forwarded to Mudgee for disposal, and which, of course, does not appear in this return.

With regard to copper, it gives me pleasure to state that a very promising discovery has been very recently made close to the township of Wellington—indeed, within half a mile. A shaft is being put down, and work going on to test the value of the discovery; but as it is not sufficiently advanced I must defer giving particulars until my next report. I, however, forward a specimen of the stone obtained therefrom.

Under all circumstances, therefore, mining prospects may be considered satisfactory. I thank all those gentlemen who so kindly afforded me information.

MUDGE DISTRICT—WINDEYER DIVISION.

(*T. H. Price, Mining Registrar.*)

IN submitting my annual report for the year 1879, I have the honor to state for your information that gold-mining in my division has been confined almost entirely to alluvial workings; the exceptional heavy rains during the greater portion of the half of last year gave a great impetus to sluicing ground that is not payable by any other mode of working; thirteen applications during the year were made to cut races, and I believe all the sluicing parties, while water was available, were very fairly remunerated. Two European miners, washing a blind gully down leading into Long Creek, for their work of five months averaged £4 10s. per man per week; two other miners, sluicing at Clarke's Creek, for about the same period, sold £150 worth of gold for their labour, the ground worked being old and abandoned; the race belonging to these men has since changed hands for £40; also, Mr. J. Cremor, of Campbell's Creek, by himself, with his race during the wet weather obtained £80 worth of gold—a splendid sample, two pieces weighing respectively 3 ozs. 14 dwts. and 3 ozs. 16 dwts., the greater part of the remainder declining in weight to 5 dwts.; this miner has taken up 25 acres in old and abandoned ground for the purpose of forming a small company to obtain an engine, which will enable them to carry on work during the insufficiency of running water in the creek.

There has been for the last four months about a dozen men waiting for special permission from the Honorable the Minister for Lands to prospect some alienated land belonging to Mr. Kirwin, at Campbell's Creek, some of these men obtained payable gold on Kirwin's land before they were apprised that it was alienated. It is much to be regretted that about 7 miles of Campbell's Creek is alienated, gold being got at the upper end of the alienated land, and the ground being worked up to Kirwin's land. It would be a great boon to the miners and the locality if the whole of this alienated land was cancelled, as it would profitably employ a couple of hundred miners for several years to come.

Mr. Thomas Mills and party have lately brought on the Upper Meroo an engine to test some wet ground there; steam-power could in many places in my division be advantageously and remuneratively employed for raising water for sluicing purposes, and as Mr. Mills's engine is the pioneer I hope others will follow.

A party of four men have for some time past been prospecting in entirely new ground; a month since one of them came to me for information, and told me they had obtained gold, but not as yet payable, and seemed very sanguine that it would not be long before they reported a new discovery of gold; the locality where they were getting gold was some miles from any workings.

Quartz reefing has not in my division arrived at that state of development which its importance deserves. There have been a great number of reefs tried, and although gold has been obtained in almost all cases they have not been considered payable, but I think I can venture to say that in no instance have the reefs been properly tested. It is the opinion of experienced and practical miners that this locality will eventually become a rich reefing district; and the very rich alluvial deposits (second to none in New South Wales) that have been found at the Pyramul, Long Creek, Clarke's Creek (Devil's Hole), Campbell's Creek, and Upper Meroo warrant the belief. Two things for developing the reefs are required here, viz., capital and its proper application.

The holders of the Crystal Palace lease, situated at Eagle Hawk Gully, Clarke's Creek, have obtained permission for suspension of work for six months, in consequence of excess of water in their shaft; they have tunnelled 109 feet and struck a blank in the reef, and on resuming work will operate in the shaft. Should this company obtain payable stone, and gold is known to be in the reef, other claims in that immediate locality will be taken up.

It is impossible in a thinly populated district containing such an area of gold-workings to obtain an accurate return of the gold won individually, and it is equally difficult to arrive at anything satisfactory from the gold-buyers, the Chinese storekeepers being about equal buyers with the Europeans. I have, however, with much trouble and the best data procurable, given the return of gold won in my division as near as obtainable, with the belief that if anything I am under rather than over the quantity, viz., 3,100 ounces, value £11,815, about one-third of which, to the best of my belief, goes respectively to Mudgee, Tambaroora, and Hargraves.

Miners' rights issued from this office—131 Europeans, 112 Chinese; total, 243.

Business licenses, 27.

LACHLAN DISTRICT.

(*Mr. Warden Dalton, P.M., Forbes.*)

IN reporting upon the several gold-fields within the Lachlan Mining District, under my charge, with their present state and the progress made in their development during the past year, I have the honor to state that the general depression of the gold-mining industry that pervaded this district at the close of 1878 continued up to the end of March last. The supply of water for mining purposes was still so limited as to retard mining operations in new country, and compel the gold-miners to cluster round old reservoirs and workings, where they did not anticipate that the return for their labour would do more than afford them a precarious support until some new discovery offered more profitable occupation. This re-working of old and abandoned claims was not without its advantages; many small angular portions of leads that had been lost were recovered; new tributaries to old leads were found, with many small outside runs that had been overlooked by the first occupants, and that usually commenced at and terminated in the old leads; the fall of a tree or an accumulation of drift would sufficiently account for one of these temporary diversions of the true course of the channel.

While a large number of miners were thus scattered over the old workings and leads, many others, including some of the most energetic and experienced, notwithstanding the difficulty caused by a scarcity of water, devoted their attention to a search for alluvial deposits of gold in new ground, or to an examination of old leads that had been abandoned for the last seventeen years, and it was thought that many of the shafts had not been bottomed or the ground sufficiently tested in the early days when the district was first discovered to be auriferous. There are several such old workings between the Tichbourne and Forbes, on the flanks of the ridge of diorite that stretches northward from the Lachlan River to the heads of the Bogan, passing through Parkes and intersecting all the known leads and auriferous reefs; many of the latter that had been worked under the old system so long as they proved remunerative, and have been abandoned for from twelve to fifteen years, were at the same time re-occupied, as it is believed that with the appliances now in use and the great reduction in the cost of crushing and treating the stone and extracting the gold therefrom they can be worked with profit. In taking up and re-opening reefs so long abandoned much preparatory work is necessary, and a long period must elapse before a return can be expected. At present rates 6 or 7 dwts. per ton where the quartz is abundant and the reefs from 15 to 24 inches thick or upwards, and the country such as usually

invests the reefs of this district, will prove remunerative. The cost of the removal of quartz from the shaft to the crushing plant might in many instances be still further reduced by the use of wooden tramways.

I have no doubt that auriferous quartz reefs will be found in the vicinity of every lead that has been worked on the Billabong Gold-field; in the year 1872 I counted upwards of eighty reefs known to contain gold; many of these have been tested; every month adds to the number of re-occupied quartz reefs or claims.

A line of quartz reefs, almost continuous in their occurrence, that would pay for crushing at the rate now charged at Parkes, extends about 30 miles northward from that town, and would afford employment to at least 300 men; many of these reefs were tested when under application for lease, but the cost of cartage and treating the stone was then so heavy as to cause their abandonment, as less than an ounce of gold per ton was found not to be remunerative; water is seldom available, but could be stored where necessary. The country is about 4 miles in width, the formation granite, diorite in dykes, greenstone in patches, and blocks of clay, slate, and schists. Further north this formation passes beneath a carboniferous country. Alluvial gold has been found in the vicinity of the reefs referred to, but nowhere payable; in fact it would require a good prospect to induce miners to occupy a waterless country so far removed from supplies. To the westward of this auriferous strip copper ore is abundant, and the lodes and veins gradually increasing in apparent value can be traced at intervals from Parkes to Gobandry, and thence to Cowan Downs and the rich mines at Cobar. The granite country round the Gobandry range is stanniferous, and tin has been found in several places favourable for its accumulation. Auriferous reefs have also been found and worked in the same locality in greenstone and hornblende formations, but the want of water and of the necessary crushing plant has prevented their being continuously worked, or by other means than unaided manual labour. Several gold-mining and mineral leases have been applied for in this district, but were refused by the Department of Mines at the time for sufficient reasons, then given. Large fields of brown hydrated iron ore and magnetic iron ore in lodes from 30 to 40 feet in width stretch along the southern slopes, or rather across them, for miles to the westward; on the northern slopes of the high lands that separate the waters of the Lachlan and the Bogan payable auriferous quartz has been obtained in several places by Parkes miners employed dam making or fencing; one of these on assay showed 4 ounces per ton, the width was 9 inches, and the stone a drab coloured quartz; nothing has been done with this reef. No mining operations other than occasional prospecting for tin have been carried on in the Gobandry country during the last two years; but I think it not improbable that the success attending the Cobar Copper mining Company may now induce others to direct their attention to the district lying between Melrose and Cobar. However rich a waterless country may be in metallic ores, it will remain unoccupied, except for pastoral purposes, unless public attention is directed towards it. Two or three gold or copper fields along the line from Melrose to Cobar would precipitate the settlement of the inter-riverine country north of the Lachlan; why Cowan Downs is not the site of another Burra Burra it is hard to say. The Yellow Mountain near Melrose is also believed to be rich in gold and copper; a portion has been under application for lease. Recently an application for a gold-mining lease of 25 acres was made to me for a tract of country between Cobar and Bourke, it was returned with full instructions how the application should be made, and to what officer. I have subsequently been informed that gold has been found at several places to the west of Cobar, and think it not improbable, as copper has hitherto been found in this Colony near or adjoining auriferous districts. I anticipate that the country between the Darling, the Lachlan, and Murrumbidgee, and the Bogan will be the site of vast mining enterprise.

Within the south-western portion of the Lachlan Mining District, round a hill westward from Bland Creek, known as Billy's Lookout, several small isolated patches consisting of sub-angular fragments of auriferous quartz have been found in dry water-courses; these were portions of surface veins less than an inch in thickness, and about 20 per cent. of the whole mass was gold; the specimens thus obtained from any one of these patches did not exceed 8 or 9 ounces in gross weight. In some instances leases of the sites of these patches were applied for and the ground sufficiently prospected, but there was no further discovery of gold in any of the sites so tested. Similar small specimens have been found in other parts of the same tract of

country, and from time to time reefs containing a little gold have been found, but neither occupied nor officially reported. The specimens are not waterworn, and no free gold has been discovered. It is probable that this dry part of the country will be prospected hereafter by miners from the gold-field at Barmedman. It has been long reputed to be auriferous, and is but little known with respect to its mineral resources.

The prospecting works for which aid was granted out of the vote of £5,000, are, with one exception, still in progress. The universal distribution of gold and the depth of the alluvium in this district render prospecting a precarious pursuit.

Billabong Gold-field.

As has been stated, alluvial mining upon the Billabong Gold-field has been chiefly restricted to prospecting on and round the scrubby plains, or working such portions of the old leads and old and abandoned ground as were believed still to contain gold. These leads have been so frequently described in former reports as to render a repetition unnecessary. In each there is some portion that has not been efficiently worked; amongst these are the Bushman's and the Welcome, where about fifty miners are constantly employed, whose industry is occasionally rewarded by the discovery of an outside run or a block that has been overlooked. On the Ben Nevis also deep ground that was long valueless, or thought to be so, has proved to be auriferous, and is worked with profit. Several of the old leads are completely deserted, while others at long intervals are occupied temporarily by a few miners. A small run of alluvial gold below the Consols reef, at the Currajong, was discovered in October last year, and proved not to be payable.

The number of miners upon the Billabong Gold-field during the first four months of the year was about 350; this number was subsequently increased to about 700, when large numbers, attracted by the favourable reports from the Queen's Lead and other small rushes in the vicinity, poured into the district. Many of these after a few days proceeded to Cootamundra, and the remainder of the new-comers settled down upon the gold-field; many of them entered into quartz-mining speculations. The number of working miners upon the field at the close of the year was about 500.

The Tichbourne Lead (midway between Forbes and Parkes) was discovered early in 1874, when that portion to the eastward of the prospector's was proved to be continuously rich in gold, while on the south-westerly continuation no well defined lead could be discovered, and of nineteen frontage holdings but six were worked with profit, the yield of gold ranging from 6 to 13 dwts. per load; no well defined lead could be discovered. That part of the field was ultimately abandoned, and remained unworked for some years. The lead was thought to have been lost and not sufficiently sought for.

About August last John M'Clelland and party took up a prospecting area within the same ground, near No. 11, M'Guiggan's Lead South, and at a depth of 123 feet struck an auriferous wash 12 to 18 inches in thickness and 25 feet in width, with a clearly defined channel pursuing a south-westerly course. The sinking was through fine sand and the drift of a disintegrated conglomerate as at the head of the old Tichborne, and the wash was of the same description. To find this lead the prospectors had to drive north, south, east, and west. A trial washing of eleven loads yielded 3 ozs. 10 dwts., or at the rate of 6 dwts, 12 gra. per load. This claim has been efficiently worked up to the present date, and the yield of gold per load has slightly improved. Four other parties occupy claims on the lead, some of whom obtain payable gold. The direction of the channel is north-westerly, and it is probable that it will be traced into the old workings on the Upper Tichbourne. When the lead was first occupied the first nine frontage claims were poor and yielded little more than wages. No. 10, at a depth of 130 feet, with 2 feet wash, produced 1,000 loads, from which 15 dwts. of gold per load were obtained; below that point the lead could not be traced. This old claim, now abandoned, is within a short distance of the ground now held by M'Clelland and his party.

The provisions for the storage of storm-water upon the Billabong Gold-field for mining purposes is the same as during the last three years. The construction of a dam across the Goobang Creek, above the bridge, on the road from Parkes to Orange, would ensure a supply of water at all seasons for puddling and working machinery by steam; this latter may be of

future importance for the purpose of constructing a reservoir of sufficient capacity to store a two years' supply. A large reserve on each bank of the creek might be made; until all the reefs are exhausted, or proved to be of no value, it would be required for gold-mining. There are several I.P. applicants along the creek whose interests would be to some extent affected, but most of them are in unauthorized occupation.

Amongst other places at the commencement of the year a large area was occupied on the plains to the south-east and south-west of the Tichbourne Leads; good prospects of coarse gold were speedily brought to grass, a rush set in, and there were 200 men on the ground within ten days. It was named the Magpie Lead, shaft after shaft was sunk, similar prospects could be obtained but nothing continuous, there was no lead. For eight weeks the men worked with untiring industry; the result was the same; ten loads were tested at the puddling machine, the yield was 2 dwts. 12 grs. per load; it was pronounced not payable, and the rush was abandoned, as the means of many of the claimholders were exhausted. The majority stated that although they had failed to discover the lead they were convinced that there is one in the vicinity that will be found sooner or later. The depth was from 90 to 130 feet, the thickness of wash from 6 to 12 inches, the bottom a series of crab holes, from the sides of which the prospects are obtained. No well defined channel was to be found. On the Magpie rush the labour of 200 men was occupied for two months without return.

In sinking upon the plains to the south of the Tichbourne, in various parts, the result has always been the same as on the Magpie rush, gold, but not in payable quantities.

There was further search on the Scrubby Plains for leads nearer the old workings; the result was much the same as at the Magpie supposed lead.

As the work done up to the termination of the first quarter was to a great extent in the nature of prospecting, and no valuable gold-bearing deposit was discovered, although large areas had been tested, there was no marked increase in the production of gold during that period.

During the ensuing portion of the half-year an improvement in the working of the gold-fields of the district commenced. Water for mining purposes became abundant; many who had been long absent returned to the scene of their former industry; large blocks of auriferous land that had been long abandoned were re-occupied; a corresponding increase in the yield of gold followed, and a general advancement of the gold-mining interests commenced that has continued its onward movement to the present time. The result of the prospecting done in the early part of the year now became manifest, and gold in payable quantities, chiefly in the vicinity of old workings, was discovered in various parts of the district, separated by long distances, in some instances exceeding 200 miles. Some of these discoveries may prove of value; amongst others the deep ground near the Ben Nevis Lead, which promises to afford profitable employment to a large number of miners for many years.

The Queen's Lead, about 6 miles north of Forbes, on the road to Parkes, and on the eastern slope of a ridge of diorite formerly noticed. This lead presents every indication of a long course in the direction of the Lachlan River, beneath a deep alluvial deposit. An extensive portion of the old Tichbourne Lead, which was lost by the first claimholders, but appears now to have been recovered. The head of M'Guiggan's Lead, in the heart of an auriferous country, much of which has been worked with profit, but of which a large portion remains to be prospected; and the valley of the Currajong, from which alluvial gold has been recently obtained in payable quantities, and where a valuable quartz reef is now being worked, with other places in the more distant parts of the Lachlan district of less importance. The discoveries referred to are for the most part upon old gold-fields of which large tracts are still unprospected, and will remain so for many years. The longer a miner works upon a gold-field the more he becomes convinced that it is not exhausted, and prefers working on ground with which he is thoroughly conversant to prospecting new country. He will doubtless make an effort to be amongst the first arrivals at a new rush, that has been discovered by others without any labour on his part; if he succeeds in obtaining a payable claim he remains, and ultimately removes his family to the new field; if he is not successful, in most instances he returns to the district he had left and resumes his former occupation. In his journey to and fro he may pass over large districts of what may be auriferous country, but of this he takes no notice, as the ordinary miner is seldom a prospector.

The prospects of the alluvial mining industry are now more encouraging than they have been at any time during the past three years.

Quartz.

During the latter part of 1879 quartz-mining has attracted the attention of the old miners upon the Billabong Gold-field. Many such reefs were worked during 1862, 1863, and 1864, so long as they continued to be payable; when failing in depth, as has been described in former reports, they were ultimately abandoned for more recent discoveries. On the subsequent re-occupation of the field other reefs in large numbers were found to contain gold, but, as was then considered, not payable. It is now thought that these reefs and veins may be worked with profit by means of the improved appliances of the present day, and several quartz-mining tenements on such reefs have been taken up during the last quarter of 1879. The Bonny Dundee had proved to be payable after a long trial, 1,503 tons of stone from that and other reefs and veins in the vicinity having contributed upwards of 600 ounces of gold to the quantity transmitted to the Mint in December last. These reefs and veins have been repeatedly described in previous reports; and all that now remains is to make 8 dwts. per ton pay, and to work them with economy and skill. Such reefs and veins are to be found on all parts of the field.

William Boyd, Richard Cotton, and two others have discovered and occupied a quartz reef containing gold near the Bushman's Dam; the specimens are rich, and there is every reason to believe that it will prove payable.

Jones Leighton and two others have occupied a reef near the Old Currajong Consols, within the last four months. On the 20th of January instant, they crushed 59 tons and obtained 117 ozs. and 4 dwts., or at the rate of 2 ozs. per ton. The stone was regular in its yield. This reef promises to be the richest on the gold-field.

William Miller has obtained payable stone from a reef on the Little Plain, near the Scrubby Plains, that had not been previously noticed; in fact, on all parts of the gold-field reefs that had been neglected for a long period are now sought after and occupied.

B. Talbot and three others have occupied an extended claim on the Victoria Reef, between the Frenchman's surfacing and the London Lead. This large reef is surrounded by several others that have not been yet tested; it contains a large quantity of gold-bearing stone that may be easily brought to grass. Worked about six years ago, the yield of gold ranged from 3 to 7 dwts. per ton; this, at the rates for crushing then prevailing, did not prove payable; but it is probable that it will improve in depth, and that richer stone may be discovered within the boundaries of the claim in smaller veins. The Victoria Lead, $\frac{3}{4}$ of a mile in length, and now thought to be exhausted, has its source of supply in the same reef; the depth reached is 14 feet, and the yield of gold from 3 to 7 dwts. per ton.

The high lands traversed by the Victoria Reef are intersected by quartz-veins, invested by dykes of diorite, transmuted sedimentary rocks, and patches of clay-slate and schists, the sedimentary rocks being much disturbed and altered, probably by the diorite and other intrusive products. On the western slopes of the mountain range are the London and Ben Nevis Leads. The formation here is of a Middle-Devonian character, and fossils of that period have been found in several places, particularly near the Ben Nevis. On the western slopes large basins of from 250 to 300 feet in depth have been discovered filled with a fine drift derived from the disintegration of an ancient conglomerate.

Beneath this drift a wash of the same description has been found from 3 to 10 feet in depth that will yield from 3 to 9 dwts. of gold per load; the average is about 5 dwts. The bottom is limestone, with occasional bands of sandstone and slate or shale.

The mountain traversed by the Victoria Reef is encompassed by the richest leads on the gold-field. The locality has been but imperfectly prospected. There are two sources for the supply of gold on these heights—one is the reefs on the eastern side, the other is derived from the drift of a disintegrated auriferous conglomerate—of this the only trace to be observed on the surface is the fine drift and the perfect attrition of the pebbles that form the wash in the several shallow rushes or areas of surfacing that surround the Victoria Mountain or range. The leads that encompass it and receive its drainage are the Welcome, Paddy's Flat, the London, Ben Nevis, M'Guiggan's, the Well-tried, Richardson's, Tear-away, and some of minor importance

that for a time supported a large population; all these, north, south, east, or west, lay at its base.

While the alluvial gold-miner has been making slow but steady progress a company formed by the inhabitants of Parkes, with the object of affording increased facilities for quartz-mining, and thereby indirectly promoting the interests of the town and district, purchased and removed a most powerful and complete quartz-crushing plant, provided with all the most modern appliances, from a distant part of Goobang Creek to the town of Parkes, where there is a permanent supply of water. The site selected is in the immediate vicinity of all the most productive quartz reefs on the Billabong Gold-field, including the Bonnie Dundee and all that series of gold-bearing veins that extend from Ramsay's Reef to the Dayspring.

As the interest of the district appears to be the chief object of the promoters, the rate charged for extracting the gold from the stone will enable many reefs to be worked with profit that have lain neglected for years. The whole cost of raising, carting, and treating the stone will be less than the former price charged for crushing. The removal of this plant has given an impetus to quartz-mining in that part of the district that must largely increase the quantity of gold transmitted by escort to the Mint.

I am of opinion that another machine, equally well situated with respect to the stone to be operated upon, and working at the same rate, would be fully employed.

For the first time the Western quartz-miner has an opportunity of working the poor reefs so abundant in the district.

The Lachlan Gold-fields.

During the past year the operations of the South Lead Gold-mining Company have been vigorously carried on. The drives have been extended in every direction with the object of proving the width and course of the continuation of the South Lead, with the value of its auriferous deposits. The gutter has been crossed to the extent of 220 feet, and its width has not yet been ascertained. In the progress of the work 900 loads of wash, obtained from the different drives, were passed through the puddling machines, and 204 ozs. 2 dwts. and 6 grs. of gold were obtained therefrom. The value of the several parcels of wash-drift varied. As the mine was opened out the water increased until additional pumping appliances became a necessity. Thirty men have been employed on the mine throughout the year; it is wet alluvial. The machinery used is a winding engine, a puddling engine, and two cast-iron puddling machines. The value of the plant is £5,000.

The progress made in the development of this mine is watched with some anxiety by the miners resident within the locality, as the discovery of a payable extension of the South Lead will be of vast importance to the mining interest. There is a large extent of auriferous country to the southward draining into the Lachlan River, and it is thought that tributary leads will be found crossing the plains from that direction.

On the upper portion of the South Lead a few claims have been occupied for a short time, at long intervals during the year. The ground is known to contain payable gold, but it cannot be drained by hand labour, and every attempt to work it by manual labour since the lead has been abandoned results in failure.

The Victoria Lead has been abandoned from the same cause. A few men, not exceeding ten, have been partially employed in fossicking upon old and abandoned ground.

About 8 miles north of Forbes are old workings known as the Queen's Lead. This ground had been occupied in the early days of the gold-field, and not being continuously payable was abandoned. About August last it was re-occupied by Heniki and party, who obtained such prospects of coarse gold as speedily brought about 300 men upon the ground. As there was no water available for mining purposes within a distance of 4 miles the ground could not be properly tested. Wash carted to the Bald Hills yielded from 3 dwts. 12 grs. to 8 dwts. of gold per load. The ground from which this wash was obtained gave from 2 to 12 grain prospects. At the end of the year there were but five parties on the lead, including Heniki and party; all could get gold, but not in sufficient quantity to pay for 4 miles of cartage.

I have no doubt that the Queen's Lead is payable, as well as others of the same character in its vicinity, and that it will be profitably worked when provision has been made for the storage

of storm water, for which there are abundant facilities. The quartz reefs and partially worked leads of this locality all deserve special attention.

On the Bald Hills Hay and party have re-organized, and only been at work on their extended claim for about one-half of the year, when they obtained 291 ozs. 3 dwts. of gold; the wash was abundant, varied in width, and the yield from 8 to 16 dwts. per load. This party have made application for three leaseholds adjoining their claim. In the same vicinity Herbert Elliott has discovered an auriferous quartz reef; it is now under application for lease. There is no doubt that the country between the Bald Hills and Strickland's Reef is auriferous; it includes the Queen's and other leads of the same class, and will be all worked at some future period.

The average number of miners employed upon the Lachlan Gold-fields during the year did not exceed 100; those on the rushes remained but a short time.

There have been no mining operations upon the Cudgellico Lake Gold-fields since August, 1878.

With respect to minerals other than gold, no mining operations are yet carried on within this district, although discoveries of copper ore are frequently reported to me.

The number of men employed during the year at unproductive rushes and prospecting has had a prejudicial effect upon the quantity of gold won during the year.

The numbers of miners' rights and business licenses issued during the year at the undermentioned places were as follows, at:—

				No. of Miners Rights.	No. of Business Licenses.
Forbes	...	...	...	442	46
Parkes	...	...	...	447	35
Grenfell	...	...	...	226	16
Total				1,115	97

The above is exclusive of Cargo, from which no return has been yet received.

Many of the above miners' rights have been issued to persons who are not miners, but who desire to occupy Crown Lands within a proclaimed gold-field for the purpose of residence. The same may be said with respect to business licenses.

Of the 500 miners estimated to be on the Billabong Gold-field at the close of the year, there were a large number who had but recently arrived, and had not yet obtained employment from which they could expect an immediate return, many had been unsuccessful at the Queen's Lead, and other rushes, while others who had turned their attention to the quartz reefs had not tested the value of their claims.

I do not think that at any time during 1879 more than 200 men were occupied in mining upon ground from which they obtained any return. The ultimate development of quartz reefs that are known to be gold bearing, and will afford permanent employment to a large settled population, will be the result of much of the work of 1879.

Lease Applications.

Of the 453 applications for gold-mining leases of auriferous parcels of Crown Lands that have passed through my office since January, 1872, thirty-one were applied for during 1879. Ten of these were received from Cargo, eight from Grenfell, seven from Forbes, and six from Parkes. The aggregate area under application being 138 acres. Of this thirteen acres on the Lake Cudgellico Gold-fields had been applied for, refused, and re-applied for within the year.

Eighteen gold-mining leases have been received during 1879 in this office for issue, nine were issued from the office, two forwarded to Cargo for issue, one do. do., and one to Grenfell.

Three mineral leases have also been received; two of these were issued, and one returned for cancellation.

Of the number of loads of auriferous drift passed through the puddling plants in the Parkes Division no very clear account has been kept; the estimated quantity is 16,000 loads, the yield of gold ranging from $2\frac{1}{2}$ to 10 dwts. per load, the average being about $4\frac{1}{2}$ dwts. On some of the old leads 6 dwts. is the common yield from blocks and angles.

1,503 tons of quartz from the Bonnie Dundee and other reefs in the Parkes Division produced 601 ozs. of gold, or an average of 8 dwts. per ton. This was crushed at the machine

completed by the company in October last. The 1,500 tons of stone were treated within the last two months, 995 tons of stone from thirteen different reefs having yielded 494 ozs. of gold.

	ozs.	dwt.	grs.
The quantity of gold transmitted by police escort from Parkes	...	...	...
was, during 1879	3,712	9	8
In the hands of private buyers	271	7	20
Transmitted to the Mint by escort from Forbes'...	1,397	7	4

Lachlan Gold-fields, Forbes.

The number of miners upon the gold-fields that immediately surround Forbes was increased from 100 to 350 during the excitement created by the rich prospects obtained at the Queen's Lead, but was soon reduced to nearly the original number. Of the 442 miners' rights and 46 business licenses issued at Forbes in 1879, the greatest part was to persons desirous of holding residence areas at Forbes, and not for mining purposes.

The quantity of gold won at Forbes and the Bald Hills, and the several leads in the vicinity, did not exceed 760 ozs. during the year. Of this the Banks purchased 476 ozs. 15 dwts., and 250 ozs. were transmitted through the Post Office. The 1,394 ozs. 7 dwts. from Forbes by escort included parcels from Grenfell to the extent of 969 ozs. forwarded by the Banks. At long intervals during 1879 an attempt has been made to re-examine some of the old leads round Forbes, but the result was not satisfactory, the heavy water being an obstacle that the miners could not compete with without steam-power.

The present year will show the value of the northern portion of the Forbes Gold-field, which has never been efficiently worked.

Emu Creek and Tyagong Gold-fields.

Considering the numerous population resident upon the Emu Creek and Tyagong Gold-fields, they have not been extensively occupied for mining purposes during the year, and cannot be said to be in a prosperous condition; but, while no marked progress has been made in their development, there has been no retrogression. The quantity of gold obtained from the same class of old workings is slightly in excess of that won in 1878, notwithstanding that eighteen of the best and most energetic miners were for several months of the year employed in testing new ground. Six of these were under the auspices of the Grenfell Prospecting Association.

The quantity of gold won, in proportion to the number of miners employed, may be favourably compared with the yield of any other of our gold-fields. No stronger proof that the mines have not been exhausted can be adduced. That there is room for a large increase in the number of miners employed upon the leads and quartz reefs is evident.

The number of miners employed upon these gold-fields did not at any time of the year exceed eighty. Of these twenty-five were employed in alluvial mining at the Quondong, the Milkman's, the Two-mile, and the Seven-mile leads. The aggregate quantity of gold procured from these sources was 316 ozs. 15 dwts. The remainder were occupied upon the quartz reefs within the Emu Creek Gold-field. 1,497 tons 5 cwt. of quartz taken from fifteen claims or leaseholds adjoining Grenfell at Emu Creek produced, during 1879, 852 ozs. 11 dwts. 10 grs. of gold, the average return being in excess of 10 dwts. per ton. The lowest return is from a parcel of stone from the Victory Reef, being from 140 tons crushed for 4 dwts. per ton. The highest is from a lot of 78 tons; the return shows a yield of 1 oz. 10 dwts. per ton. The Enterprise has not produced less than 1 oz. per ton for some years. It is not worked for long periods, as the shareholders appear only to work when low in funds. All these fifteen holdings are within an area of 500 acres, and within that area there is ample room for the employment of as many more miners as are now in occupation. 550 tons of quartz, in small parcels, have been treated in addition to that above stated during the year; the average quantity of gold won from such quartz was at the rate of 10 dwts. per ton.

The total quantity of gold extracted from an aggregate of 2,047 tons of quartz was 1,146 ozs., being an increase of 54 ozs. on the quantity won in 1878 from the same workings.

At the old Seven-mile Lead 870 loads of wash-dirt were passed through the puddling machine. The aggregate yield was 264 ozs., the average per load, 6 dwts.

At the Quondong, the Two-mile, and the Milkman's 264 loads were puddled; the gold won ranged from 3 dwts. 12 grs. to 5 dwts. per load. The total quantity of wash treated was 1,134 loads; the total quantity of alluvial gold won, 316 ozs. 15 dwts.

I think it probable that the former channel of the Seven-mile will be found to turn south before reaching the Emu Creek.

The total quantity of gold obtained at Emu Creek during 1879 was 1,463 ozs. 8 dwts. and 6 grs.; that bought by the Banks in 1878 was 1,552 ozs.

Although a search for new auriferous deposits has been prosecuted with much industry during a large part of the year no new leads or reefs have been found that would pay for working.

Three strong parties of able miners have been employed in testing new ground—the first at Tin Pot Gully, near Omah; the second at Bogobogolong, on the road between Forbes and Grenfell; and the third near the Weddin Mountain, at the lower end of the Seven-mile. The first and the last received assistance from the Government out of the vote of £5,000 in aid of prospecting the gold-fields.

The main channel of drainage in the basin of the Tyagong remains as yet undiscovered and untested. It will probably be traced from the Seven-mile.

226 miners' rights and sixteen business licenses have been issued at Grenfell during the year.

The finding of a new gold-field has more frequently than otherwise been the result of accident. Grenfell is the centre of an auriferous district of immense extent, and at any moment a discovery may be made that will restore these gold-fields to their former position.

LACHLAN DISTRICT

(*Mr. Warden Robinson, P.M., Young.*)

I HAVE the honor to furnish a statistical report of the gold-fields—southern division of the Lachlan gold-mining district—for the year 1879.

According to all available returns the quantity of gold which has been raised amounts to 1,755 ozs. 13 dwts., and of the value of £6,800. Deduct from this 633 ozs. 17 dwts. won from Barmedman Reefs, Grenfell District, leaves for the Young Division 1,121 ozs. 16 dwts. Place this quantity against that of the previous year, and a falling off is shown to the extent of 1,021 ozs. Yet in 1878 the number of miners' rights issued from this office was only 314, business licenses for the same period being twenty-three; whereas in 1879 we issued 458 miners' rights and twenty-four licenses. The anomaly here presented is accounted for by the recent rushes—first, to the Police Paddock, then to Scrub Yards, and latterly to Blind Creek, Murrumburrah. The excess of miners' rights over the previous year, and at the same time a falling off by nearly one-half in the yield of gold is thus accounted for—particularly as there has been little, if any, gold produced from the two latter places; and the Police Paddock cannot be considered as anything short of a failure. In all there were seventy claims taken up in it. Twenty-five parties worked there at one time with commendable perseverance, but their average earnings per man did not amount to quite 20s. a week. At the end of the year six claims were still kept in possession; now there are three parties of two each holding on. The rush early in November last to Blind Creek, Murrumburrah, settled about 150 diggers there; a like number still remains, which bids fair for the locality being thoroughly prospected. The workings on this ground are extremely easy; bottoming ranges at depths of from five to eighteen feet, and in several claims fair prospects have been obtained.

The Scrub Yards I have not visited. Mr. Warden De Boos will, I have no doubt, give a full report of that part of this division. The extent of country thereabouts known to be more or less auriferous is very considerable; and, as I noticed in my last report, will, I am convinced, some day present to the gold-digger a wide field for the exercise of his calling. As many as 1,500 persons have been there together; but the present population, all told, does not exceed 350 persons. In conclusion, I may remark that Barmedman Reefs are the richest claims that can be recognized any where at the present time within the Lachlan Gold-fields. The reason of returns from these reefs appearing in my report is, that the proprietors reside in Young, the capital for working the reefs is supplied from here, and our Banks have purchased the gold.

LACHLAN DISTRICT—FORBES DIVISION.

(F. S. Osborn, Mining Registrar.)

IN transmitting my annual report of the mines within my division for the year 1879, I have to state that the mining industry has improved, and will during the coming year show a large increase in return of gold won, the South, Bald Hills, and Queen's Leads being in active work, and improving. On the various reefs nothing has been done, which has been caused by the total destruction of Mr. Cullow's quartz-crushing plant by fire, which would necessitate miners carting their quartz some 20 miles. It is reported that some gentlemen intend to form a company and work the Strickland's Reef, near Forbes, and erect machinery on the ground. Should that be the case, reef mining will again be entered into, as there are several payable reefs in and around Forbes.

I will now furnish you with particulars of the various mines within my division.

Alluvial Mining.

South Lead, Forbes.—The South Lead Gold-mining Company's mine commenced operations eighteen months ago, and since that time have made satisfactory progress, viz., repairing and enlarging old shaft, constructing water lodgment, and sinking the shaft 30 feet deeper, together with opening out a large chamber and driving 300 feet of under main levels and constructed 1,500 feet of drives in wash-dirt, which has produced 900 tons of wash-dirt, yielding 204 ozs. 2 dwts. and 6 grs., value in money £770 19s. 1d.

This mine is possessed of a powerful plant, viz., two steam-engines, 18 horse-power each, and two Cornish boilers. There are attached to the winding engine tanks and cages, the wash-dirt being hauled up in iron trucks by Bessemer steel-wire ropes.

The puddling engine drives two cast-iron puddling machines, elevated 24 feet from the surface, besides working a surface pump to supply sluice, &c.

This mine has been making at the rate of 50 gallons of water per minute for the last nine months. This enormous quantity has been hitherto raised by iron tanks attached to the winding engine. This quantity amounts to 321 tons, raised every twenty-four hours. The wear and tear of the winding engine ropes, &c., is found to be too great to continue. It has therefore been decided to erect another pumping engine on this mine; this, it is believed, will complete this already extensive plant.

It is fortunate that the South Lead Gold-mining Company have already proved the existence of splendid and extensive tracts of payable wash-dirt within the boundary of their large mining property; but it is, however, necessary to open out this mine and thoroughly drain the ground before much profit can be realized.

Bald Hills Lead, near Forbes.—On this lead a great deal of work has been done during the year by Edmund Hey and others, of the amalgamated extended claims. They commenced sinking a new shaft on the 19th of April, 1879, and bottomed at a depth of 200 feet. The shaft is slabbed and centred with a well-hole 9 feet deep (being troubled with water). They have driven 120 feet south, the drives being 5 feet square, timbered with box logs 8 inches to 1 foot through. Their north drive is 250 feet, same size, and timbered in a similar manner. Width of face, 50 to 60 feet, with 18 inches to 2 feet of wash-dirt.

They have puddled 700 loads of wash-dirt for a yield of 291 ozs. 3 dwts.

Three leases have been applied for on this lead, but have not yet been issued; and the lessees are endeavouring to float same into a company, as they would be unable to work their ground without machinery to overcome the water they would be troubled with. I believe this lead as it extends will be found to be rich, although great difficulties will have to be overcome.

Hey and others have been earning from £5 to £7 per man per week on an average during the time they were on wash-dirt, and would have shown a much larger yield of gold for the year had they not been compelled to sink a new shaft to obtain air and ventilate their mine. They speak most hopefully of their venture now that they have their mine in thorough working order.

Queen's Lead, Forbes.—This lead has been prospected and worked several times during the last twelve years by miners, but without results. Last June Peter Zimmermann and party

applied for an extended claim, and commenced work. They bottomed their first shaft at 80 feet, too shallow, then sunk a second shaft and bottomed at 108 feet on a little wash, but ground dipping. Wash prospected 1 grain to 2 dwts. per dish, but not regular. When this became known a rush took place, numbering some 300 miners or more, from Parkes and other places. A few claims then commenced sinking, but others only shepherded until No. 1 South had bottomed. During this time the prospectors' ground did not prospect well, and the Warden ordered them to wash a few loads, and some twelve loads were put through a puddling machine at the Bald Hills, when the result of the washing was a yield of only $2\frac{1}{2}$ dwts. to the load. The Scrub Yards rush having taken place about this time, the miners on this lead, considering it of no value, abandoned their claims, and proceeded to the above-named rush, with the exception of those employed in No. 1 South, who bottomed their shaft and obtained prospects of a grain to two grains to the dish, but, like the prospectors', not regular. Having very heavy rains about this time, and not being experienced miners, they neglected to slab their ground; the consequence was they lost their shaft, which caused them to abandon the ground.

The prospectors not being satisfied commenced to sink another shaft, being their third, which they bottomed at 112 feet, with 18 inches to 2 feet of wash. They have driven 45 feet north and south and 20 feet east; have washed some 80 loads at the Bald Hills, 57 loads of which only gave an average of $3\frac{1}{2}$ dwts. to the load, which did not satisfy them. They then tried cradling, and put through 6 loads, which averaged 8 dwts. to the load, thus showing that the fine gold was lost by puddling at the machine at the Bald Hills. When their last washing became known, Nos. 1, 2, 3, 4, and 5 south, and No. 1 north were again occupied by miners from Parkes, and they are now all busily working. No. 1 south have bottomed at 118 feet on wash, and have driven 20 feet east, with wash 1 foot to 2 feet, with prospects of 1 to 2 grains to the dish, and more regular than the prospectors, and an occasional dwt. piece. The prospectors have applied for a site for a dam, and intend to erect a puddling machine on the ground, when, I have no doubt, they will be able to make good wages, with an occasional patch of rich wash. There are thirty miners now working on this lead, and they seem satisfied with their ventures.

On the Madman's, Grassett's, Union, and other old leads, work has been done by fossickers, who when they have leisure time work on these leads until they make an ounce or two of gold, which they sell to storekeepers and others for goods for their families, and then resume their various occupations again. Over 200 ounces of gold have been obtained in this way during the year 1879 within my division.

Quartz Reefs.

No work has been done on any of the reefs within my division during the year, for causes stated in my opening remarks.

Foster's Reef, Cudgellico.—The legal manager of the Foster's Reef Gold-mining Company, in reply to a communication requesting him to forward report of the mines within the Cudgellico Gold-field, states that all mining operations have been suspended since August, 1878, when the above company discontinued working, pending the issue of the gold-mining leases of the land on which the mine is situated and the works erected, but he is advised by the directors as soon as the leases are in their possession they will take definite action in regard to working the mine. He also states that no mining of any kind is being carried on there at present.

No minerals or metals other than gold have been sought for during the year. Six gold-mining leases have been applied for. During the year 442 miners' rights and 46 business licenses have been issued, the majority of the miners' rights were issued to persons to secure their residence areas on the gold-field.

General Remarks.

I have experienced great difficulty in getting a true return of the gold won in my division during the year, as there are a number of fossickers who when they have leisure time fossick for gold on the old leads, and exchange same for goods with the storekeepers, and others also with the Chinese, who take no note, and will give no information as to the quantity bought. Other small parcels are sent to Parkes; and the jewellers in Forbes inform me that they forward small parcels to Sydney to be converted into jewellery.

LACHLAN DISTRICT.—PARKES DIVISION.

(W. C. Weston, Mining Registrar.)

In submitting my annual returns for this portion of the Lachlan Gold-field, I have much pleasure in being able to report increased activity in mining matters at Parkes, Currajong, Ben Nevis, and Great Northern, so much so that we look forward to a more prosperous year in 1880 than 1879 has been, although we have less to complain of in 1879 than in 1878. In my last report I mentioned I could not understand why more reefs were not worked. I have had the solution given me, and also the remedy. I am glad to have to record that at present numerous reefs are being worked, and what is still better, they are paying good wages, and one or two, to be mentioned further on, are first-class investments.

The reason the reefs were not generally worked before was the poor appliances for crushing the stone, and the high price charged per ton ; but a change has come over us, and I hope I may not be thought too sanguine when I say that a brilliant future lays before us, and I trust a long period of success. This, in a great measure, is entirely due to two of our respected townsmen, viz., Mr. Benjamin Talbot, manager for Manson & Co., and Mr. John Ward, storekeeper. These gentlemen thought that if a first-class crushing plant was erected that it would induce miners to try reefing, and the result has proved they were right. They therefore formed a company, bought the old Buchanan engine and Low's dam, and had it removed from its old site on the Billabong Creek to a site on Low's dam at the south end of Welcome-street, Parkes, and are crushing stone at 7s. 6d. per load. The company consists of 100 shareholders of £10 each, and removing the machinery, refixing it, and purchasing Low's dam and putting it in thorough working order, have cost about £2000. Up to the present time sufficient stone has been got to keep it employed, and I only hope nothing will occur to stop the machine. I forgot to mention that the engine and plant were taken down, and re-erected by Mr. W. Clarke, who appears to be a very able and efficient manager. Mr. Clarke is the present manager of the plant, and the diggers have every confidence in him. The rush at Scrubby Plains at the beginning of the year did not lead to much, although I am inclined to think there is still gold in the vicinity, and I shall not be surprised if a lead turns up that will connect the Queen's Lead, near Forbes, and the Wapping Butcher, on the Parkes side of Scrubby Plain. The rush at M'Guiggan's—now known as M'Clenndand's (the prospectors)—is still going on. There are at present about 200 people on the ground, and ten claims are on gold. Several washings-up have taken place and given very satisfactory returns. I have every confidence in this lead,—that is, that it will lead to something better,—for it is absurd to think all the gold has been got in this neighbourhood. At the Ben Nevis, Frampton and Mitchell are still working their very good claim, and I believe it will take them two years to work it out. It is one of the best claims in this district, and when the men stick to work, they can make £10 a week per man.

George Ritchie and Whittaker have also an excellent claim here, and are doing exceptionally well. There are others at work getting more or less. At Currajong things are lively, and many old residents prognosticate the return of old times, when gold was plentiful. They have certainly some cause to be jubilant, as several quartz claims show remarkably well, notably Jones and party, who are getting up 2-oz. stone, and they inform me they have plenty of it, and easily got ; 25 feet sinking is not much for such stone, and if it continues there can be no doubt that it is a fortune for the shareholders (there are only four in it). Bothwell and party have removed from where they were getting payable stone to the east end of their claim, in the hope of getting Jones and party's reef. These gentlemen don't appear to have heard of the old motto—that a rolling stone gathers no moss. I think they should have followed down the reef they were at.

Kidney and party, who got 12 ozs. of gold out of less than a ton of stone by hand-crushing and washing in a tub, are still at work ; the reef, although very narrow, looks well, and will pay them well for the trouble they are taking. They have now with them an experienced quartz-miner in Mr. Kidney, senior, who has taken the son's place ; the rest of the party appear to be novices at quartz-mining. Their claim adjoins Hacket and party, who have also a good prospect. They have had a couple of lots crushed which payed them handsomely and they are quite satisfied with the prospect before them.

Several other parties are at work at Currajong, sinking in hopes of striking payable stone. The whole of Happy Valley at Currajong seems to be a network of reefs, and as several parties have struck payable stone it is only fair to surmise that there are as good fish in the sea as have been taken out. As regards the Great Northern, I am informed that Clarke and party have overcome the water in their claim, and as they know there is gold beneath they will soon get at it now. Should it prove anything good several other parties are ready to commence sinking. On the whole, things look considerably brighter, and I augur from the increase of miners a greater return of the precious metal, and possibly fresh leads being struck. The number of miners' rights issued during 1879 was 447, and thirty-five business licenses. Forty-two mining tenements (quartz) were taken up and registered, as against eight in 1878. Up to present date, this year, viz., 21st January, I have issued 224 miners' rights, as against 174 in January, 1879, an increase of fifty. The gold bought by the Banks during 1879 does not tot up quite as much as in 1878, but this cannot be taken as any criterion of the amount really obtained. The Commercial Bank bought 1,746 ozs. 8 dwts. 20 grs., and the Joint Stock 1,743 ozs. 9 dwts. 19 grs. It is rather a singular coincidence that the amounts should approximate so closely. The discontinuance of the escort has caused great inconvenience and very general complaints. Of course the amount cannot now be so accurately ascertained as formerly.

Before closing my report I should like to refer very briefly to the splendid harvest just garnered. The crops of wheat have never been excelled, very little rust having appeared to injure the yield. Potatoes, that excellent vegetable, are a drug, and hay and corn are cheap and good.

Of copper-mining I have nothing to report, as, with the exception of a $\frac{1}{2}$ -share in Powell and Mc'Gee's mine changing hands, nothing has been done. I am informed, however, that as soon as the other share, belonging to a person who has not the means to go extensively into machinery, is disposed of that work will be recommenced and a company formed.

I have just heard from Jones and party that their crushing of 60 tons of stone from their claim at Currajong went over 2 ozs. to the ton. This speaks well for the prospects of Parkes this year.

LACHLAN DISTRICT—CARGO DIVISION.

(*R. Hutton, Mining Registrar.*)

In reporting on the alluvial mining in this division for several years, I find that each year I have had to chronicle a falling off from the preceding one, and 1879 is no exception to the rule. All the claims which have been worked for so many years on the perpendicular veins or lead on Gum Flat are now abandoned, and the alluvial mining that has been done during the year cannot be said to be much better than fossicking. About 2,000 tons of wash-dirt have been raised and put through the puddling machine, for a yield of about 3 dwts. to the ton, giving about 300 ozs. of gold as the result of the alluvial mining in the division during the year.

There was considerable excitement during the latter part of the year as to the result of the prospecting operations which were being carried on (with assistance from the prospecting vote) in the Harrie Wood prospecting area, Gum Flat. Miners' rights were taken out, and claims pegged out in all directions as near the area as possible, a number of shafts were sunk but in every instance the results were nil. As the operations of this prospecting company have been fully reported upon by the Inspector of Mines it will not be necessary for me to enter into the subject. I may state, however, that they lately bottomed a monkey shaft, 70 feet deep, in one of their drives, and could scarcely raise the colour. They now consider the ground tested, and are about to abandon it.

In quartz-mining the same three leaseholds which were at work during 1878 were also at work during 1879, viz., Ironclad Gold-mining Company, Ironclad Reef; Mathieson and party, Ironclad Reef; and Elder and party, Victim Reef.

For some reason the Ironclad Company do not wish to have their operations published; it is well known, however, that there was more gold won during last year than the preceding one, and that the expenses were less, as a good deal of the work was done by contract. About eighteen men on an average were employed, and about 1,200 ozs. of gold obtained by the company during the year.

Mathieson and party have had no crushings during the year. They are very sanguine as to their prospects, as the best gold lately obtained by the Ironclad Company was got on their boundary, and was evidently running into their ground.

Elder and party lately had a crushing of 13 tons, which yielded 2 ozs. to the ton. This leasehold is about to be floated into a company, and if so I believe it will be a paying concern. In former reports I have pointed out this ground as a place where a company would be likely to do well. It is situated on a spur of the Ironclad Range, immediately above where the best gold on Gum Flat was got, and no doubt it was the discharge from this spur which supplied that alluvial flat. Mr. Elder showed me the returns from a number of small crushings he had, in all 150 tons, which gave a gross yield of 333 ozs. 2 dwts. 7 grs.; one lot of 1 cwt. 3 qrs. 12 lbs. of stone yielded 19 ozs. 7 dwts.; he had two or three other small crushings, but had not kept the returns. The stone from this ground is full of pyrites, which no doubt carried away a great deal of the gold. A sample of the tailings was tested at the Mint, and gave $1\frac{1}{2}$ oz. to the ton.

A claim on what seems to be a continuation of the Dalcooth Reef is being worked by Clerk and Thomas; this vein is very narrow, but rich in gold; they had a trial crushing lately of 30 tons, which yielded 1 oz. 7 dwts. to the ton.

For some years I have been expecting a revival in reefing in this division; that revival however seems long in coming, but that it will come I still feel confident. The following list of reefs, with the result of trial crushings which have been had from them several years ago, will show that a change for the better may sometime be confidently expected:—

M'Ginnis Reef.—M'Ginnis and party.—Yielded 1 oz. 10 dwts. per ton.

Homeward Bound Reef.—Duff and party.—Several crushings yielded from 15 dwts. to 1 oz. 9 dwts. per ton.

The same reef.—Alderton and Co.—50 tons yielded 100 ozs.

Mobbs Reef.—Mobbs and Co.—1 oz. to the ton.

Alpine Reef.—H. C. Wall and party.—Crushed, at Grenfell, 2 ozs. to the ton.

New Chum Hill.—Oswell and party.—9 dwts. per ton.

Rise and Shine.—Prospectors.—Several crushings, 15 dwts. to 2 ozs. 10 dwts. per ton.

" " Coomber and Co.—Several crushings, 15 dwts. to 3 ozs. per ton.

Last Push.—Hawkins and Co.—15 dwts. per ton.

Prince Alfred Reef.—Clerk and Co.—5 dwts. per ton.

Lucknow Reef.—Perry and Co.—2 ozs. per ton; three dishes gave 9 ozs.

No. 2 South Ironclad Reef.—3 tons crushed, yielded 100 ozs. gold.

No. 4 " " " " Scofield and Co.—15 dwts. per ton.

Adelaide Reef.—Campbell and Co.—15 dwts. per ton.

Galatea Reef.—Craven and Co.—Several crushings, 15 dwts. to 1 oz. per ton.

It will be considered strange that these reefs, after giving such good returns, should be abandoned, but the fact is, when they were tested the crushing appliances on the place were of the most primitive description; the miners believed that they lost as much gold as they saved; the batteries were so small that it took almost as much time to crush the stone as to raise it; added to this, the high price charged for carting and crushing (£1 per ton) left but a very small margin for the miner; the result was, in almost every case, the parties applied for leases of their ground, and left for other fields; it was then years before the leases were issued, and when they were issued the applicants had either found employment on other fields or their address was not known, the leases were therefore cancelled on account of non execution, and the ground abandoned. It is to be hoped, however, that before long the attention of men of experience and capital will be turned to this place, when it will not be too much to expect a better future for the Cargo Division.

The quantity of gold obtained in the division during the year was—alluvial, 300 ozs.; reefs, 1,260 ozs.; total, 1,560 ozs.

80 miners' rights were issued during the year, and 7 business licenses.

The number of men employed was—alluvial, 20; quartz-mining, 25.

LACHLAN DISTRICT—GRENFELL DIVISION.

(E. G. Brodie, *Mining Registrar.*)

I HAVE the honor to forward my report relative to mining interests in this division for the year 1879. During the period an impetus has been given to prospecting in the district, and a considerable amount of energy and perseverance exhibited by those engaged in the work, although the result has been so far unsatisfactory, as no new payable alluvial leads or quartz reefs have been discovered. It is, nevertheless, the firm conviction of those who are best qualified to judge that gold-mining here is still in its infancy, and that success will sooner or later attend those in search of the precious metal.

The Government prospecting party of six men, who commenced operations in October last, 8 miles S.W. of Grenfell, 2 miles E. of the Weddin mountains, and distant about 1 mile from the Tyagong Creek, whose object was to test the deep leads supposed by competent authorities to exist in that neighbourhood, sank altogether eight shafts, varying in depth from 106 feet to 153 feet, and bottomed in each. In several they obtained a strong colour; but although the party drove a distance of 100 feet they failed to obtain anything payable. Great hopes were entertained of a new field being discovered by this party, and their failure caused general disappointment. Sandy and party, who were subsidized from the Government prospecting vote of £5,000, also sank five shafts, varying in depth from 70 to 180 feet, on Oma Creek, midway between Grenfell and Forbes, with unsatisfactory results.

During last year about 21 men were engaged in alluvial mining in this division, and 44 men in quartz-mining. The yield of gold was—From alluviums, 316 oza. 15 dwts.; from quartz, 1,146 oza. 13 dwts. 6 gra.; making a total of 1,463 oza. 8 dwts. 6 gra.; value, £5,560 19s. 4d. Average price of gold during the year, 76s per oz.

In conclusion, I think that if Government money were judiciously expended in prospecting this acknowledged auriferous district the result would be highly satisfactory. At present mining interests in this locality are at a very low ebb, as in consequence of bad times during the last three years the miners are not able to undertake any work of magnitude without pecuniary assistance.

LACHLAN DISTRICT—YOUNG DIVISION.

(H. A. Smith, *Mining Registrar.*)

I HAVE the honor to make my report for the year 1879 of the Young Division of the Lachlan Mining District. In doing so, I must express regret the report is so meagre, owing to the short time I have held my present appointment.

I find there has been a considerable increase in the number of miners' rights issued in 1879 over 1878, but a decrease in the amount of gold raised. This contradiction will be accounted for by the fact that a great many rights were issued at the latter part of the year in consequence of the rushes to Blind Creek, Murrumburrah, and to Scrub Yard, or Woodstown. Neither of these places have been fully tested owing to the want of water. I have every reason to believe when a sufficient supply is obtainable the apparent contradiction of more workers and smaller results will be reversed, and the report for 1880 will be more cheering. There were 458 miners' rights issued from here, and 24 business licenses, for the year 1879, and 1,755 oza. 13 dwts. of gold returned, valued at £6,800; of this, 633 oza. 17 dwts. came from Barmedman Reef, in the Grenfell District, held by proprietors at Young.

In reefing there is nothing to report, although at times cheerful rumours are current of rich stone being found there is not sufficient loose cash about to tempt possessors to risk in the venture. When, however, times brighten, I doubt not but reefs will be opened and worked, and capital also brought into other gold-fields industries, and machinery will be substituted for the present antiquated and wasteful means adopted for getting gold with profit to speculators.

LACHLAN DISTRICT—BAKER DIVISION.

(H. Margules, *Acting Mining Registrar.*)

I HAVE the honor to submit to you my annual report of the division under my charge, only recently created, under date 17th October, 1879, which thus leaves room but for a brief account.

Geographical Features.

The division comprises the Gundibedal Gold-field proclaimed on the 13th May, 1879, containing an area of 25 miles x 25 miles, within the county of Bland.

The principal watersheds are the Bland or Yeo Yeo Creek, taking its rise at the junction of the Stockinbingal and other creeks, and falling into Lake Cowal and the Narraburra Creek, rising near Combaning, and taking a northerly course. Both these watersheds start south and run north, and appear to be permanent watercourses. Besides these channels the country is watered by numerous small creeks or rivulets; the principal seem to be the Gundibedal, Grogan, Stockinbingal, Walladilly, the Congon, &c. Their permanency is not easily established.

The county of Bland is known to be well adapted for farming as well as for pastoral pursuits, and the frequent discoveries of gold within its boundaries for the last sixteen years make it a promising field for miners. The soil has a sallow brown appearance, and underneath it the Pleistocene clays are much stained with iron. There are no high mountains, but numerous gentle sloping hills, rounded and picturesquely formed; indeed the surface features seldom give here an accurate estimate of the original existing features, and the miner might look for deep ground on spots where a hit or so with a pick might soon convince him that he stands upon a buried hill. The work of time has reduced hill or dale almost to the same level, and thus, though we find no mountains, we see stretched before us wide flats, plains, and valleys, or gullies, with recently formed shallow creeks, scarce of water in hot or dry seasons.

In the vicinity of the recent gold discovery a township was formed on the 10th November, 1879, and named by me Woodstown, in honour of Harrie Wood, Esq., Under Secretary for Mines, as a meet acknowledgment of the valuable services rendered to the mining communities of New South Wales. Woodstown seems to occupy the centre of the abovenamed gold-field, under 34 degrees 30 minutes south latitude, and 147 degrees 45 minutes east longitude, and is indeed charmingly situated upon rising ground, forming a fine natural terrace with valleys north and south stretching before it. The town contains five public-houses, of which Mrs. Angove's and Nelson's might well be classed as hotels, and three more are under application, then about eleven stores of all sorts and descriptions, also bakers, butchers, and people of all trades and skill, supported by a population of from 800 to 1,000 souls. Water supply may only be secured by reservoirs. The nearest creek is the Gundibedal, about 1 mile south, but it does not appear to be a permanent watercourse. The Narraburra Creek lies westerly a distance of 5 miles, and the Bland Creek about 15 miles easterly.

At present no Government offices are established at Woodstown except a Warden's Court and a Mining Registrar's Office. The population certainly accords great credit to the Department of Mines for the timely and judicious steps taken to relieve a young mining community of hardships which necessarily and unavoidably must have multiplied had the establishment of these offices been delayed. An instance is the trouble, expense, and loss of time a person here has to undergo for every trifle in connection with a Court of Petty Sessions, which is not nearer than Young, a distance of 50 miles. A Post Office will be established on the 1st day of February, 1880. Woodstown has no police protection yet.

Geological Features.

Since my arrival, on the 18th October, 1879, upon the field my time was necessarily occupied with office work and official duties, so that I could scarcely devote much time to visiting distant localities and workings, hence my examination of the district cannot be looked upon as complete, but from inspections made I would class the formation here as palæozoic, metamorphic or transmuted, and tertiary.

Indeed, the formations, as far as I have observed, differ very little from those in the Parkes or Grenfell districts, and a great deal of what I said in my report of 1875 of these districts may be equally applied here. I am led to infer by tracings to hand that this locality seems a continuous link of the chain of gold-bearing tracts in the belt uniting Parkes, Forbes, Grenfell,

Young, Adelong, Tumbaramba, &c. Though the valleys are wider and of larger extent than in these districts, the rounded hills in groups, the clays, the slates, sandstone, pipeclay, and the other rocks, with very few exceptions, seem the same. There appears to be more asbestos here than I have met with in my travels before; at the Exhibition Lead it is mixed up in the wash.

Dykes of diorite are very frequent in this district.

Gold-mining on Alluvial—Exhibition Lead.

It appears, in the month of February, 1879, Messrs. Thomas Carey, J. Wyhowski, and James H. Maloney prospected the alluvial ground at two places $\frac{3}{4}$ mile apart, bottomed two shafts at the respective depths of 71 and 87 feet, obtained only small prospects, and abandoned the places. During the early part of October, 1879, Mr. Thomas Carey formed another party, and thus, with the assistance of Mr. Henry Ponting, succeeded in obtaining payable wash at the 87-foot shaft, while Messrs. Andrew and Harrigan Brothers occupied the other shaft of 71 feet. On the 10th October, 1879, Messrs. Carey and Ponting washed $3\frac{3}{4}$ loads of dirt, with a yield of 1 oz. 1 dwt. 12 grs., which being made known generally caused the great influx of people and the formation of the town of Woodstown. The lead runs at the foot of the hillock, which the town stands upon. Messrs. Andrew and party also washed, on the 11th October, 1879, from their shaft 3 loads, with a yield of 15 dwts. Both these results were reported to the Warden's Office at Young, but no other steps were taken.

The department, considering the find of some importance, despatched Mr. Geological-Surveyor Young, who visited the field on the 12th October, 1879, received the accounts above stated, inspected the district, and duly reported results of visit on the 14th October, 1879. Upon that report I was instructed to proceed to the new rush on the 17th of the same month, and arrived here on the 18th October, 1879.

After inspection I thought myself justified to allow prospectors time, that is, to 22nd October, 1879, for the reporting of payable gold, and accordingly Messrs. Carey and Ponting hoisted the red flag on Wednesday, the 22nd October, 1879, and reported gold at 10 a.m. on the same day; Messrs. Andrew and Harrigan hoisted the red flag on the same day, and reported gold on the next day, that is, on the 23rd day of October, 1879, according to the Regulations of the Mining Board. The find was then christened by Mrs. Ponting the Exhibition Lead.

At the time of the report to me already five other claims were upon the auriferous wash, with various prospects, some even better than either of the named prospecting parties obtained

The Exhibition Lead was soon traced over a mile and a-half in extent, but found very unprofitable a few hundred yards below Messrs. Ponting and Carey's claim, there being no water or machinery for puddling, and the ground there lies idle at present, but will be worked as soon as machines commence to puddle.

Besides the two prospecting parties, twenty claims are worked in a continuous string, in exceptional cases two abreast, claims being held here upon the block system. The majority of claims are worked by parties of six men.

Claims of some importance besides prospectors are Boyland and party, Toohey and party, Cook and party, Hall and party, Ponting, Rees and party, and others.

The bed-rock is slate. The wash is from 8 inches to 2 feet thick, from 12 to 100 feet wide. The prospects are from 4 dwts. to 10 dwts. to the load. At the end of December, 1879, there were about 2,500 loads to grass. The gold is bright reef gold, containing quartz.

The sinking is as follows :—Messrs. Carey and Ponting's prospecting claim—

Clayey sallow soil	...	...	...	...	...	4 feet
Gravel	...	...	...	...	...	2 "
Stiff clay, red and white	...	...	...	...	...	30 "
Stiff ferruginous clay, with clinkers	...	...	...	...	...	30 "
Sandy clay	...	...	...	...	...	6 "
Sand gravel	...	...	...	...	...	4 "
Wash	...	...	...	...	...	1 "
						<hr/> 87 feet

Messrs. Andrew and party's prospecting claim :—

Sallow soil ...	...	...	...	...	...	...	5 feet
Gravel ...	...	...	...	...	...	...	4 "
Brown clay ...	...	...	...	...	...	...	20 "
Gravel ...	...	...	...	...	...	...	2 "
Yellow clay...	...	...	...	...	...	...	20 "
Gravel ...	...	...	...	...	...	...	10 "
Chocolate clay	...	...	...	...	...	...	9 "
Wash ...	...	...	...	...	...	...	1 "
							<hr/> 71 feet <hr/>

Only a few of the claims above Messrs. Andrew and party's claim are upon gold. The run of wash in these areas seems very difficult to follow up. In No. 4 a shallow run was discovered, but though the prospects were good the bulk of wash proved quite unprofitable.

As at the M'Guiggan's, London, &c., on the Billabong Gold-field, so here, clinkers are in abundance, and weary the patience of the miner. I am assured that these hard flinty substances occur in every layer of the various clays, and hence prove even more troublesome here than there.

Pebbles of all sizes, colours, and shapes are in abundance here too. Amongst the wash there is a heavy quantity of magnetite, which will greatly retard the saving of the gold.

Opossum Power.—About 4 miles south of Woodstown, at a gully called Opossum Power, from a diminutive engine or crushing plant once erected there, a shallow run, from 9 to 15 feet deep, with a width of from 6 to 9 feet of wash, has been worked for the last nine months. The dirt yielded from 5 to 10 dwts. to the load. The run, from its extreme narrowness, is almost impossible to trace, but, in spite of all difficulties, two or three parties seem to have obtained the gutter. The precious metal, of which I enclose a sample, is undoubtedly reef gold. This limited run has already given out a large amount of gold, considering its extent, which metal found its way to Young and Grenfell.

The valley being of immense extent and width has been prospected at different times, but results have always turned out discouraging. The sinking is not very difficult, but the foul air sometimes met with proves a great drawback. Since the opening of the Exhibition Lead Messrs. Lewis and party set on to test the deep ground, and bottomed at 115 feet. At about 50 feet they encountered a layer of cement, and before touching the bed-rock they met with about 15 feet of white drift sand. While driving they came upon large quartz boulders, and more or less wash, but no encouraging prospects. Other parties have sunk, and others are still sinking, shafts, hence it is yet premature to pass an opinion, still I believe, though nothing except the narrow run has been yet discovered, that Opossum Power might very likely rival the Paddy's Flat of the Parkes District.

Not a great distance from that gully, on the Gundibendal Creek, Mr. Lewis has erected a dam and a small puddling machine.

Maloney's Gully.—About 2½ miles south-south-east from Woodstown Messrs. James H. Maloney (one of the original prospectors), Gormley and party are prospecting a very extensive gully; they have already put down several shafts and have driven to a good extent. The deepest shaft is 85 feet, the sinking being easy, on to a bed-rock of sandstone. The ground is not proven yet. The second prospectors, Kellackey and party, are more to the south-east, and have actually deeper ground, that is, a depth of 90 feet. By all appearances there is no doubt that something of a payable nature will be found there. If so, miners will come into contact with the lessee, Mr. Seaborne, whose property extends to and crosses the supposed lead.

Eastern, Slaughter-yard, and other Gullies.—These gullies have been prospected by Messrs. Carey and party, Palmer and party, and Feder and party respectively, and abandoned,

but the localities show gold, and very likely will be taken up again, and no doubt will turn out yet profitable workings.

Temora.—About 12 miles due west from Woodstown parties are prospecting at a depth of 50 feet, and have over 5 feet wash, but have taken only $2\frac{1}{2}$ feet. Prospectors propose soon to try the dirt, and, should results warrant, report gold to me.

Alluvial workings are reported in various other localities.

Gold-mining upon Quartz Reefs.—This branch has a history of its own, not unlike of other districts. The difficulties in quartz-reefing are so great, so tantalising, confounding, and heavy, that in New South Wales especially it had never received that genial nursing it really needed to make it a success. I have explained in my report of the M'Guiggan's Division in 1875 the causes of quartz-reefing being a difficulty surpassing every alluvial mining trouble in tracing or following up leads, hence I shall desist from these repetitions; but I must otherwise state here that within this district quartz-mining has received exceptional bad treatment in the past, inasmuch even parties having had erected crushing plants had them removed again actually while payable stone having been supplied to them. The case of Mr. Kirkpatrick, in 1870, proves that, while leaving payable stone to crush in this district, he removed his plant to the Marshall Macmahon Reef, at Murrumburrah. There is no water, no reservoirs, no machinery within an easy distance to successfully prosecute quartz-reefing at present here. The quartz of reefs when tried stood mostly a favourable test. Men of capital and machinery would certainly do well by a visit of inspection.

Opossum Power Reef, $3\frac{1}{2}$ miles south of Woodstown, was first discovered in 1864, and abandoned, but taken up again in 1869 by Messrs. Aubrey and Allen and party, who brought a small movable machine upon the reef with such limited power that it was named Opossum Power. The strike of reef is north and south, the vein is narrow, averaging 6 inches, and was worked for some time but not to any depth; the quartz crushed, about 40 to 50 tons, yielded from 5 ozs. to 5 dwts. to the ton. The walls are sandstone and slate. The small machine was very inefficient, hence the undertaking was abandoned.

Specimen Hill Reef, 1 mile east from Woodstown, was discovered in May, 1869, by Carey, Barnett, and Scott. The strike is north and south. The leaders were from 1 to 2 inches and sometimes a foot wide, and frequently intersecting one another. Twenty tons crushed at Junee realized 1 oz. to the ton. The walls are well defined and of slate. Mr. Joseph Copeland crushed at his machine, which was removed during the drought in 1878, a parcel of stone with a result of 1 oz. 1 dwt. to the ton. Altogether 60 to 70 tons had been crushed from this reef.

The Blackwall Reef, $\frac{3}{4}$ mile east from Woodstown, was opened in July 1869, by Messrs. Hobson, Carey, and Young, and has a strike north-east to south-west. The vein has an average width of 12 inches. The shaft was sunk to a depth of 150 feet where the lode had widened from 2 to 3 feet but became poor. The upper stone went from 8 to 10 dwts. to the ton. The walls are of diorite and sandstone. Altogether 100 tons were crushed from this reef up to 1871.

The Sussex Reef was discovered in 1870, by Messrs. Carey, Andrew, and party. It lies $1\frac{1}{2}$ miles south-east from Woodstown. The vein is small, averaging 6 inches, but very rich; 60 tons of stone crushed at Junee are reported to have realized $2\frac{1}{2}$ ozs. to the ton. At 65 feet depth the reef split upon the underlay. Want of funds led to abandonment. Soft diorite constitutes the walls.

Little Wonder Reef, found by Messrs. Andrew and Harrigan, in 1870, lies $2\frac{1}{2}$ miles south from Woodstown, has a north and south strike, is well defined, with an average width of 1 foot, and has been traced to a depth of 120 feet. The walls are of slate. From the claim of the prospectors there seems to have been several crushings, and, according to Mr. Immer Andrew's

statement, the stone yielded in 1872 as follows:—4 tons, 10 ozs. to the ton; 50 tons, 1½ ozs. to the ton; 70 tons, 1 oz. to the ton; and 30 tons, 15 dwts. to the ton. Other parties held adjoining claims and crushed with an average of 10 dwts. to the ton. At present only Messrs. Andrew and party are claimholders under suspension of work.

The Bristol Reef, found by Scully and party, was only worked upon the surface. This reef is supposed to be a continuation of the Little Wonder.

The Perseverance Reef, 1 mile south of Woodstown, and near the entrance gate leading to the homestead of Gundibendal North, Mr. Seaborne's station, is 3 feet thick, solid, with well defined walls, had shown good stone at surface, but ran out at a small depth. 20 tons yielded 5 dwts. to the ton.

Temora Reef, 12 miles west from Woodstown, has been worked and abandoned years ago, but lately taken up again. The stone shows gold.

Other reefs are in abundance here which are of a payable quality, but are either held on lease and not worked, or alienated by conditional purchase and lying idle, the owners preventing the working of them.

By the above details it may be assumed that the reefs upon this field have given out in past times about 1,277 ozs., or more, the gold finding its way, as in the case of the alluvial proceeds, to Grenfell mostly. There is no doubt that in the future this branch of mining will improve, and greater quantities of stone will be raised and better results upon the average obtained.

General Remarks

The Baker Division has produced, before the discovery of the present gold workings, some significant quantity of gold, as above narrated, but as I cannot take cognizance of any previous results I shall simply mention the products of the now closing year, 1879.

Gold Produced.

		oz.	dwts.	grs.
From various workings	... ..	200	0	0
From Exhibition Lead, 2,500 loads	... ..	825	0	0
to grass and not puddled				
Total	... ..	1,025	0	0

The value of gold here is £3 16s. to the ounce; hence an amount of £3,900 will be realized.

Though a population might have been here during one time or another numbering as high as 1,500 souls, and might still count perhaps 800 souls, there could have been at work, including carters, puddlers, &c., earning wages by their labour or not (as usual on gold-fields, employed and unemployed), at any given time no more than 250 men since the 22nd October last—that is, during ten weeks in all—and take £3,900, and divide the sum, a very handsome result will be the consequence—that is, £1 11s. 5d. per man per week.

Undoubtedly for a large population like the one here, the humour, and excitement, and passions, heightened by holidays, the orderly conduct speaks volumes of commendation, and ought to bear a most favourable comparison with, and exemplary contrast to, old communities. This is a record well worthy of notice—that is, from 800 to 1,500 people, for ten weeks during the most memorable festivities of the year, without police protection, gave no cause for a police case even. A more moral and peaceful community will be a difficult task to find.

With the workings already in full swing, new leads to be opened, the quartz reefs deservedly inviting attention, there scarcely may exist a doubt as to the permanency of this field. Besides, the soil ought to produce permanent settlement, since with a little outlay for irrigation, in reservoirs and tanks, and drainage, the land will produce any vegetation desired of it by either the agriculturalist or pastoralist.

There may also exist no doubt in any unbiassed mind that as soon as a good water supply is secured in the dams already erected, and puddling will have commenced in full earnest, a very large mining population will gather again around Woodstown, far larger than at the end of the present year. It is therefore a pity that there is no post office yet here, nor police protection, nor a Court of Petty Sessions. The Department of Mines has certainly afforded everything in its power to lessen the drawbacks consequent upon new discoveries in unsettled bush tracts; hence everywhere its action is gratefully acknowledged.

In concluding, I must draw attention to the fact that on my arrival here I had the honor to submit recommendations for the proclamation of reserves on account of gold, and for the preservation of timber, in order that the land undoubtedly auriferous might not be absorbed by conditional or other sales, and that useful forests shall not be destroyed wantonly while the new rising communities require wood for building, timbering shafts, and other purposes; and pointed out the following boundaries, viz.:—In the parishes of Wallandry, Dingi Dingi, Gundibendal, and Combaning, county of Bland: Commencing at the northern boundary of portion 3, parish Wallandry, running west to Narraburra Creek, and east to Yeo Yeo Creek; thence southerly by Yeo Yeo Creek to south-east corner to parish Dingi Dingi; thence west to the north-east corner of parish Hockinbingal; thence south about 4 miles; thence west to Narraburra Creek, adjoining the northern boundary of water reserve No. 16; thence along that creek northerly to the point of commencement.

SOUTHERN DISTRICT.

(*Mr. Warden De Boos, Braidwood.*)

It is gratifying to me to be able to give a more encouraging account of the gold-fields under my charge than I have been in a position to do for the last few years.

The drought which has prevailed for the last four or five years, and which brought mining to a very low ebb, may be said to have broken up last autumn, when the welcome rains gave a copious supply of water to the many creeks which are the feeders of the main streams, and whence the supply of water for the head-races is mainly derived. The drooping weather which followed upon the first heavy downfall of rain has maintained the supply, and caused the re-opening of many of the springs which had previously been dry for years. So much has this been the case, that races cut at a great expense, which had been useless for the last three years, are now in full operation, and miners are at last getting a return from the wash-dirt which had remained stored and stacked for months.

The rainfall, however, has not been an altogether unmixed advantage; for Araluen has suffered very severely from floods, and at one time it was thought that great destitution would be caused by the filling in of the claims there. Owing, however, to the prompt action taken by the Government in supplying road-work for the men thus suddenly thrown out of employment, the difficulty was met at the outset, a remedy was at once applied, and the men were enabled to earn fair wages until work could again be resumed on the claims.

Taken altogether, the season has been the finest the miners have had for their occupation for many years past. Grass has been plentiful everywhere for their horses—no small consideration to the really enterprising miner on his prospecting expeditions—whilst there is abundance of water everywhere. It is not at all surprising then that under such favorable circumstances prospecting should be pushed on in every direction. Reports have reached me, though not in such an official form as will enable me to make use of them, of the probability of payable

discoveries being made in several localities in the Southern Mining District, and notably in the coast portion of the district. I have considered it advisable to make no mention of these until I could be assured of the facts in connection with them, as I considered it would be undesirable to cause any excitement until there should be tangible grounds for so doing. There are now so many miners seeking more profitable working ground than that on which they are at present employed that the slightest whisper of a new gold discovery is like applying fire to powder—it sends them off at once.

Witness the rush to the Merool Creek, as it has been termed, the true history of which gives the best possible exemplification of my meaning. It occurred thus: Mr. John Neill and his mate, the prospectors, thinking they had fallen upon a good thing, went into Grenfell to secure by registration a prospecting protection area, that being the only means by which, under the Mining Board Regulations, it could be done. Whilst there they showed to one or two friends the gold they had obtained. This got wind, the quantity, as may be readily understood, losing nothing by rumour, and the prospectors were questioned over and over again by the excited miners. The more the prospectors tried to keep down the excitement, the more the miners thought they were being kept out of a good thing. The prospectors were shepherd and followed when they left Grenfell, and an attempt on their part to escape from pursuit only made the pursuers still more certain that they were on the right track. They reached the ground, and the history of their speedy disappointment has been already told.

I have already reported to you on the country where the gold is said to have been found. I use this form of words advisedly, as I have grave doubts whether the nugget sent down to the Honorable the Secretary for Mines came from the spot indicated. It appears to me not to be of the same character of gold as that of the finer particles which accompanied it, whilst to my seeming it bore the marks of having been carried about for some considerable time, the more prominent portions of the surface being worn smooth. My report on this field has been already made public by the department. It will be needless therefore for me to go again over the same ground; but as I believe the Levels country is likely before long to come prominently into public notice, it may not be out of place to summarize the opinion I then formed.

The soil throughout is a schist alluvium, showing water-worn pebbles of milky quartz in occasional beds, but having no regular gravelly wash such as the miner looks for in the generality of auriferous country. The wash-dirt is a sandy clay, mixed with fragments of hard slate and some quartz, all much water-worn, and lies on a soft pipeclay, evidently the edges of a fast decomposing schist.

On the Wyalong Run, north of the creek where the ground was worked, the country rises into ironbark ridges, with thick scrubs of Mallee and Boree at their bases. The ridges are composed of harsh, coarse, red schists, having almost the appearance of sandstone, and so called by the miners. Quartz veins and reefs have been found in the slate on these ridges, but none have been thought worth working in the absence of crushing machinery. These ranges are very much denuded, having apparently been exposed at some period to very great atmospheric action, and it is to this denudation that the level plains below owe their origin. Inter-mittent efforts have been made over a large area to test the ground by putting down shafts. Some of these have been as much as 130 feet deep; in almost every instance colours of gold have been obtained, but never in sufficient quantity to pay.

A very general impression has been abroad for many years past that the Levels country is not only auriferous but that there is a rich and extensive gold-field yet to be discovered in it. It cannot be denied that the general features of the country very much resemble those of the Lachlan or Forbes Gold-field more especially in regard to the character of the deposits sunk through. The great and material difference between the two in my opinion is that the denudation of the hills and the filling up of the valleys have been much more recent in the Levels than in the Forbes country, and have occurred since the period of lava flow or igneous action, as there are no signs of trap, scoria, or igneous rock to be encountered in sinking.

The recent discoveries at the Scrub Yards, proclaimed as the Gundibindyal Gold-field, but more generally known as the Baker Gold-field, may here be noticed, as they lie on the eastern edge of the Levels country, and on the fall into the Bland or Yeo Yeo Creek. They occur between the Junee and Sebastopol Gold-fields on the south-east, and Barmedan and Willandra on the north-west. The proclaimed gold-field is some 25 miles long by 20 miles wide, the area reserved from conditional purchase being some 3 miles square. The only lead yet opened is the Main or Exhibition Lead, situated about a mile north from the Gundibindyal head station, 30 miles north-west from Cootamundra, and 55 miles south-west from Young. The hills, as is the case throughout the whole of this country, are little more than gentle elevations, showing the same harsh, red, coarse slate which is the leading characteristic of the Levels country. Here also the hills are much denuded, the slate cropping up almost vertically with sharp edges, and being exceedingly hard. The valleys have been filled in almost to a level with schistose alluvium of various qualities and colours, the several varieties occurring at intervals of some 2 feet. The prospecting shaft, Pontier's, is on the bottom at 90 feet. The wash contains a little red and white gravel mixed with small quartz pebbles not much water-worn; but the great bulk of it consists of decomposed sandy slate, largely intermixed with black sand. The gold is coarse and rugged, very little water-worn. The slate forming the bottom lies nearly vertical, the edges well defined but much decomposed. The best of the wash-dirt is found in the interstices of the slate, and often shows gold to the naked eye. From its tenacious character the whole of the wash will have to be puddled, and until some large quantity has been treated full confidence in this gold-field will not be established. During my last visit to Woodstown, the name given to the settlement formed here, a very heavy thunderstorm occurred, and enough water was caught in the prospectors' dam to enable them to wash about 200 loads of dirt. The puddling machine at the dam was on the point of completion, and there is no doubt but that before the end of the month the quantity mentioned will have been put through. If it goes half an ounce to the load the success of the lead is assured, as the miners will sink with the confidence that their labour will be rewarded; for, notwithstanding the deep sinking, there is a very large body of wash-dirt, averaging about 2 feet deep, and ranging from 30 feet to 60 feet wide, the latter width having been proved in the prospectors shaft. As far as the prospectors are concerned, half an ounce to the load will give a very good return, as the wash is being raised within 50 yards of the puddling machine. Other claimholders will have to follow this example, and to construct dams in such positions as to be as near as possible to their working shafts to save expense of haulage.

There is no water procurable for gold-mining purposes, except as may be saved and stored in dams and reservoirs. Three of these have been already constructed, but they are of so inadequate size that they can be regarded as capable of furnishing nothing more than a mere temporary supply. For the permanent supply of water for household use the miners are dependent upon the Gundibindyal head station dam, the proprietor selling it at the very reasonable rate of 6d. per cask.

The lead has been proved for over a mile in length, and besides the prospectors some sixteen or seventeen claims have bottomed on gold.

A site for a township, under the name of Woodstown, has been laid out, with the necessary reserves for public purposes, and some sixty or seventy business sites have been taken up. Four public-houses have been opened, and application has been made for a license for a fifth. A temporary Court-house has been erected, and a Warden's Court has been proclaimed and is now in full operation.

Three miles south from Woodstown is the Possum Power Creek, whence gold has been obtained for the last six or seven years. It was first procured from a reef at the head of the creek, the stone giving as much as 7 ounces to the ton, though it was crushed in a very rickety battery, worked by an engine of such diminutive power that the miners nicknamed it Possum Power Engine, and hence the name of the creek. This reef, which shows about 18 inches wide, has only just been skimmed over, and has not been sunk on more than 15 feet or 16 feet at the deepest. In the next instance the gold was found in a narrow run about 10 yards below the reef. It was pure reef gold, very little water-worn, and seems to have come direct from the reef,

having travelled no farther than the distance mentioned. This narrow run is still being worked by some four or five parties, and payable gold is being obtained from it. On the flat below the reef a very energetic party of miners have put down several shafts. The last that was reported to me bottomed at 118 feet, with a few colours, but not enough to pay. The soil sunk through was of precisely the same character as that already described, slate alluvium of various colours; but two belts of hard cement were met with, one at about 80 feet and the other at 90 feet. On getting through the lower of them the shaft filled with foul air, and the fan had to be resorted to before work could be continued. At about 110 feet they came upon a sandy wash thickly interspersed with quartz debris, and having a very promising appearance. Within the next 3 feet the quartz debris got larger and coarser, but in spite of the likely look the wash was not payable.

A large amount of prospecting is going on within an area of 20 miles in either direction from Woodstown, and as the present season, as I have already explained, is exceptionally favourable for the purpose, there is fair reason for surmising that other and similar leads to the one already opened will be discovered before long.

Amongst the chief of these is a gully at the foot of the Ironbark Ranges, and running into Gundibindyal Creek, and about 4 miles south-east from Woodstown. Here a persevering party under Maloney, one of the original prospectors of the Exhibition Lead, has sunk some seven or eight shafts to depths varying from 40 to 60 feet, but hitherto without success. Another party higher up the creek have also put down several shafts, and informed me that in the last shaft sunk they had struck wash which showed some colours of gold. In spite of their want of success these parties still entertain high hopes of the ground, and claims have been marked out and shepherded in all directions.

At Temora again, 12 miles west of Woodstown, several parties are prospecting vigorously, but no intelligence of a successful find has yet reached me.

Just before leaving Cootamundra on my last visit I was informed that Mr. Heffernan, owner of the Clear Hills Station, near Junee, had mentioned to several persons, one of whom was my informant, that a good reef had been struck in a belt of Ironbark country on his run. The prospects were so good that Mr. Heffernan had taken up a claim on the reef, and as he is an old and successful reefer, the fact of his having so done should speak in favour of the discovery.

The reef is situated about 7 miles from the Junee Reef, and about the same distance from the Sebastopol Reef; and the belt of Ironbark country must, from what I can learn, be a continuation of that which occurs about 3 miles before reaching Woodstown, in which is situated the Little Wonder Reef, formerly worked very successfully and extensively. I was further informed that there was every probability of alluvial workings being found in the gullies which run into Hoolahan's Creek, and that parties were making arrangements for prospecting the ground. The discovery was made accidentally by some bush hands sent to search for timber for the Narrandera railway. No further information has reached me up to the date of this report.

As I have mentioned in an early paragraph, Araluen has suffered very heavily from the great rainfall, which has so materially benefited the other portions of the Southern Mining District. All the large claims were filled in by the floods, and it was not till the middle of December that they again got so far on with the work of repair as to be able to wash up. The effect of the floods may be traced in the falling off of the gold purchases at Araluen during the few months of the year; whilst the largely increased returns from Major's Creek and Little River show how very materially they have benefited by that which so injured their neighbours. The claims, however, are once more fully at work, and additional precautions have been taken to prevent a recurrence of damage should floods again ensue at the fall of the year. Mr. H. Johnson and party are working up energetically to catch some new ground, not before worked, as also to reach a very rich patch that could not be worked in the old times owing to excess of water, which two powerful engines were unable to keep down. Now, with the tail-race 6 feet in the bed-rock, the water is run off naturally and without expense after the first cost of cutting the race has been defrayed. Blatchford and party have made a very fine face on their claim since re-opening after the flood, but as yet they have not been successful in striking anything good. Alley's party are

again on their old run of gold, after heavy work in pumping and clearing out their paddock. The advantages of working by means of tail-races were never more manifest than on the occasion of the last floods, for the water, though very excessive, was carried off steadily until the embankments gave way and the paddocks were silted up with sand. Both Blatchford's and Johnson's tail or drainage races are now deep in the bed-rock, quite sufficiently so to take the drainage from any part of the creek above, no matter how great may be the inequalities of the bottom. Newman's drainage race at Crown Flat is also being brought up steadily, and in the course of time will be in such a position as to command and drain the whole of the large flat at Redbank. Many scientific gentlemen, and nearly all the experienced miners who have seen it, are of opinion that another run of gold will be found here as rich, if not richer, than that which has been traced in the present creek bed. As it is hardly likely that the creek has run through all time along its present bed, the inference is that some other and older creek bed must exist somewhere between the ranges on either side. If so, then, from the formation of the country, it must almost of necessity pass somewhere through the Redbank Flat. Had this been public land it would have been proved long ago; but as it is private property, and as the water is very hard to beat, miners do not care about risking the outlay necessary to test it.

At Major's Creek flooding off has been carried on energetically so long as the water lasted, and, as I have before mentioned, the time of flood is the opportunity of the Major's Creek men. In some cases as much as 30 feet of surface soil have to be washed away before the gold can be reached. As this work has to be done by water, it follows that only a copious and continuous stream can be of any avail. Knowing this, great anxiety has been expressed for many years past to get the water from the Shoalhaven River on to Major's Creek. A very general impression prevailed that this could be done with comparative ease and at small expense; but a survey ordered in the early part of the year by Mr. Secretary Baker has shown that to reach Major's Creek the Shoalhaven River would have to be tapped so high in its course as to preclude the possibility of its furnishing anything like such a supply as would be needed. What was required was to furnish such a stream of water as would keep the whole of the miners of the creek at work. A mere sufficiency for some eight or ten parties was not at all what was wanted. The survey made by Mr. Surveyor Mackworth, and afterwards checked by his superior officer, showed that only a partial supply could be obtained, and that at a greater cost than would be justified by the result. It was afterwards suggested that the construction of dams would be serviceable to the miners. This however would admittedly give only a limited and intermittent supply, such as the miners now have by their own dams. The men themselves were the first to set their faces against this proposal, as they had the good sense to see that the benefit to be conferred on them would not in any way be commensurate with the outlay for the work. This scheme was also allowed to fall through; and now the necessary supply for gold-mining purposes is furnished, as hitherto, by the collecting dams of individual miners and a main race from Back Creek.

Reefing at Major's Creek has had somewhat of a check, owing to the difficulty that has been experienced in treating the metallic stone of the Snobs' Reef—Rield's lease. The proprietors of this lease, after spending some £3,000 upon opening and developing the mine and experimenting on the stone, have now found that unless treated on the ground the stone will not pay, and that the cost of transporting even the condensed metal from Major's Creek to Victoria weights the ore with too much expense. The reef is now idle, suspensions of labour conditions having been granted, pending experiments upon the micaceous stone of Dargue's Reef. These have been much more favourable than had been anticipated, and the result has been that a Victorian company is about to erect works for the treatment of the stone at Major's Creek. The two reefs—Dargue's and the Snobs'—will furnish stone enough to keep the works constantly going.

Mr. Quong Tart has done a great deal of work at Bell's Creek during the past year. He has carried up a continuation of the old American drainage race some 500 or 600 yards, working the ground as he goes onwards. In this way he has washed away about 60 yards of a hill some 80 feet high. A little has also been done here in reefing, but the work in this line has not been by any means extensive or continuous.

The Mongarlowe or Little River has benefited very materially by the late change in the weather, as some of the long races which have been quite useless during the last three years,

owing to want of water, have lately carried a copious supply, and thus have allowed a good deal of earth that had been collected and stored for months to be washed up. There is on this field a very large amount of surfacing that will pay well for ground-sluicing whenever water in sufficient quantity can be brought to bear upon it. Some of this surfacing extends as far back as 2 miles from the river, and would afford a large field for mining enterprise in wet seasons, were it not that so much of the country has been alienated. To so great an extent has this been carried that not only has auriferous land been taken up under conditional purchase, but the gold-field reserve of half-a-mile on each side the river has been so shut in that there is no possibility of bringing a head-race on to it from the creeks at the back. This locality has again astonished by turning out, even at this late period of its history, several handsome and weighty nuggets. Mr. Galway, Mining Registrar of this division, informs me that he is preparing for his report a list, as nearly as can be ascertained, of all the large nuggets found here since the opening of the field. If this be done with any approach to correctness, I think you will find it to be a list that is to be exceeded by very few gold-producing localities in Australia.

I much regret to have again to state that the reefs here still continue idle. I am convinced and I am not alone in the conviction that the reefs here would pay handsomely if properly worked—not as in the old days to, be over-weighted with expenses, but to be worked systematically with proper appliances and with all those means for saving labour that are now adopted in Victoria. For instance, the great drawback to the working of these reefs hitherto has been the cost of pumping. This might be done away with by working with an adit, by which all the water would be carried. An adit from Serjeant's Gully would cut the Homeward Bound line of reef at about 90 feet. The water is first reached at about 40 feet, and is got through at 60 feet or 70 feet. It is thus only surface water, and the adit at the depth mentioned would carry it all off. The stone also could be run out on trucks on a tramway laid on an incline to an engine erected on the bank of the river. Here it could be shot into the hopper of a stone-breaker, and thence fed into the stamping battery. This would minimise the cost of bringing the stone to grass, and a company starting in this way would not only be certain of success but would also do an immense amount of good by setting an example which would soon be copied, and by teaching the miners how to work the reefs at the least possible expense. Nine out of ten visitors to the Mongarlowe are struck with the appearance of the reefs, but unfortunately none have yet had the enterprise to work them.

A party of four experienced miners have been at work for the last six months in the basaltic hills on the banks of the Shoalhaven River, near Nerriga. They first endeavoured to get under the basalt from the river bank, but found that the slates dipped into the bank much below the present level of the river, and that consequently it would be impossible to keep their workings dry. They therefore took the hill for it, and they have put down, as I have been informed, some half-dozen shafts from 20 to 60 feet deep, and bottomed on gold in each instance, but not in quantity to pay. At the end of November a letter from Nerriga informed me that they were down 70 feet with another shaft, sinking through the basalt. An appeal was made to me in that letter to endeavour to obtain for the party, Government assistance to enable them to carry on the work; but it was with regret that I had to inform them that the money voted by the Assembly for assisting prospectors had been already apportioned and all but expended.

Some of the leases on the reefs at Yalwal are being worked. They were all lying idle for the want of machinery when I was last there, and I have not visited the locality since work has been resumed.

Work at the Dromedary seems to be carrying on very steadily. The return of gold from this locality is very encouraging, if account be taken of the comparatively small number of men working there, and also of the fact that up to the present time none of the stone has been crushed. The gold has therefore been derived from the alluvial and from the rubble of the reefs. That there is a good gold-field here may now be regarded as certain, and, as I have pointed out in a former report, there is no knowing how far it may extend, or what area it may cover. As the work progresses it is not at all improbable that both Dignam's Creek and Reedy Creek will furnish good claims, though in both of them a large amount of underground water will have to be contended against. There is a good supply of water on the top of the

mountain, but, as may be readily conceived, it is limited in quantity, and this limit will always be a drawback to the employment of any large number of men at the present workings. The streams, however, though small, are numerous, and offer a great advantage to the prospector, as should new ground be opened a supply of water unavailable for the present workings may in almost every instance be brought to bear upon it. Lower down the mountain side, as soon as the creeks begin to spread out into alluvial flats, the underground water becomes excessive, and can only be beat by powerful pumps or drainage races. Up to the present the south-eastern face of the mountain has proved the more auriferous, some very rich patches of alluvial having been struck there, but the northern face will probably take the lead so soon as Cowdroy's stamping battery gets to work. It has been erected near the top of the mountain, the crushing plant being complete and ready for work. It only awaits the motive-power to commence crushing. This is to be supplied by a turbine, which will be set up early next month. These wheels are especially applicable to such a position as the Dromedary, where there is only a comparatively small body of water, but a deep fall. Two hundred feet of fall may readily be obtained, and as these wheels acquire their power from the height of fall rather than the large body of water, the conditions of the locality are precisely suited to bringing out their full force. A site has been reserved for a township on one of the higher plateaux of the mountain, but no application has yet been made for a business site, and, regarding the comparative inaccessibility of the position, it is hardly likely that a permanent settlement will be formed here—certainly not for very many years to come. Under these circumstances I have not thought it necessary to lay out a line of street. Indeed the miners are so scattered, each taking up ground to suit himself, that no spot could be found upon the mountain sufficiently convenient at all as a business settlement. As it is now, the miners on the south side deal with Tilba Tilba and Cobargo, whilst those on the north side patronise Wogonga and Eurobodalla. A comparatively accessible horse track has been made up the northern side, thus greatly facilitating the packing of supplies up to the summit.

Considering the number of miners employed, Kiandra has this year produced a fair amount of gold. The return is all the more astonishing, if it is remembered that the miners there cannot work in snow, nor in summer, and that consequently only about six months out of the twelve are suitable for mining. Thus the returns for the time actually employed at work are not by any means bad. Everything here depends upon the supply of water, so that those who have the first water-rights out of creeks or springs virtually hold the gold-field in their hands. All the disputes that I have heard here are about or in connection with water, and some of the parties have shown themselves to be exceedingly pertinacious in wrong-doing. This is shown from the circumstance that my last four visits to this locality have been necessitated by the disputes of the self-same individuals.

The floods of last autumn and winter were a great drawback to the workings on the Eucumbine River, near Seymour (Adaminaby), but since the river has become more settled the claims have been again opened, and they now extend some 4 or 5 miles up the river.

At Micalago the reef is being very steadily worked by a party of Cornish miners. They manage to make good wages, though their battery and tables are of so poor a description that as much gold is lost over the tables as is saved on them.

From Gundaroo the discovery of another auriferous reef at Brook's Creek, above the alluvial workings, has been reported to me officially, and I was also informed when last in Goulburn that efforts were being made to again start work on Mac's Reef. I have received no authentic report from Dawson's Reef, but I have been given to understand that no permanent reef has yet been struck, and that nothing but what may be termed floating stone has hitherto been met with.

The return of gold will be forwarded to you so soon as I get in the reports of the officers of the district.

RETURN of Gold purchased by the Banks from the

Month.	Major's Creek.	Little River.	Araluen.	Jambaicum-bene.	Shoalhaven River.	Bell's Creek.	Bombala.	Brook's Creek.
	oz. dw. gr.	oz. dw. gr.	oz. dw. gr.	oz. dw. gr.	oz. dw. gr.	oz. dw. gr.	oz. dw. gr.	oz. dw. gr.
January	89 3 3	117 8 22	325 0 0	12 5 12	1 6 12	10 0 0	10 19 20	5 2 0
February	164 7 20	97 1 1	450 0 0	9 16 13	2 11 18	18 17 12	54 1 19	.....
March	157 19 3	146 12 6	487 0 0	13 3 17	35 3 0	20 0 0	47 1 20	.....
April	363 11 5	59 17 6	348 2 7	15 9 19	84 9 17	12 0 0	75 7 20	.....
May.....	170 2 2	81 12 21	415 0 0	21 3 0	1 9 0	61 19 22	29 10 6	12 6 15
June	272 10 0	161 16 23	400 0 0	12 0 0	9 0 0	19 0 0	52 6 7	.....
July	203 0 0	175 3 16	423 0 0	19 18 15	14 16 0	20 18 0	47 17 9	.....
August	135 7 8	215 18 17	455 0 0	19 14 0	23 0 19	21 14 0	56 7 1	.....
September	296 7 8	74 7 2	145 0 0	23 16 3	43 7 13	34 7 7	66 8 0	.....
October	336 9 0	226 12 22	154 0 0	43 5 20	174 4 6	15 0 0	37 9 2	.....
November	204 11 14	223 2 6	287 0 0	60 0 18	8 18 2	23 16 15	70 12 22	.....
December	230 10 8	232 18 17	335 0 0	30 2 0	63 18 4	53 5 6	81 5 14	.....
Lump sums for the year..	.....	.....	.....	.....	.....	.....	.....	123 10 15
Total	2623 18 23	1867 12 15	4224 2 7	235 15 21	467 4 19	320 18 14	629 7 20	140 19 6

Braidwood, 2nd February, 1880.

SOUTHERN DISTRICT—BRAIDWOOD DIVISION.

(W. F. Robertson, Mining Registrar)

IN submitting this, my report on the mining operations in the Braidwood Division of the Southern Mining District for the year 1879, I do myself the honor to state that although from the accompanying tabulated returns a diminution is apparent in the quantity of gold gained in the year 1879 as compared with that of the year immediately preceding it, yet there has been an increased activity amongst the mining population of the division during the past year, but more particularly in the latter part of the year, which is worthy to be noted, and which gives promise of increased returns to the miners for the year ensuing; and the increased activity to which I have alluded has been occasioned by the rainfall which occurred during the latter part of the year, whereby races and claims which had been lying idle for three or four years past for the want of water were to some extent supplied with water. The process of re-opening old claims and races of necessity drew the miners away from their claims on the banks of the river and other permanent streams where they had latterly gained smaller but never-failing returns for their labour to works connected with the old claims, which, although not producing an immediate

various Fields under the charge of Mr. Warden De Boos.

Micalago.	Molongio River.	Mogo.	Dwyer's Creek.	Nowra.	Nerrigundah.	Dromedary.	Bellmbla.	Kiandra.	Various parts, in small parcels.	Total.
oz. dw. gr.	oz. dw. gr.	oz. dw. gr.	oz. dw. gr.	oz. dw. gr.	oz. dw. gr.	oz. dw. gr.	oz. dw. gr.	oz. dw. gr.	oz. dw. gr.	oz. dw. gr.
.....	571 5 21
.....	796 16 11
.....	906 19 22
.....	958 18 2
10 13 0	808 16 18
.....	926 13 6
.....	904 13 16
24 5 0	956 6 21
0 15 0	689 8 9
.....	992 1 2
10 12 0	2 0 0	.....	.....	.....	.....	.....	.....	.....	.....	895 14 5
20 7 0	1102 7 1
.....	73 3 13	56 8 6	1200 0 0	554 8 6	1092 5 21	8 2 20	1500 0 0	800 0 0	4602 19 9
66 12 0	2 0 0	73 3 13	56 8 6	1200 0 0	554 8 6	1092 5 21	8 2 20	1500 0 0	800 0 0	15408 0 23

CHAS. DE BOOS,
Warden.

return, give promise of a more abundant return at no very distant date. That, I think, may be considered as one reason for the falling off in the output of gold; and another reason is, that at times of floods in the rivers and creeks, such as occurred on several occasions during the long winter of last year, the miners (hardy and persevering as they are, working night and day if need be in fine weather) will not or cannot work in constant rain such as occurred for weeks together at the times of those floods; and the flood waters interfered so materially with the working of the claims that in nearly all cases on the river banks the whole of the mining operations were entirely suspended for several days together, the claims, races, &c., being entirely submerged, and when the waters subsided the claims and races were generally found to be filled in with, and in some cases buried beneath, tons of drift sand and mud, to remove which occupied the miners days or even weeks before they could restore their claims, &c., to working order and get a return for their work. It will thus be seen that the increased rainfall of last year has not been of so great advantage as might be supposed. But I think it will be found to be of great advantage in the ensuing year, although so disastrous had been the effects on these gold-fields of the past five or six years of dry seasons that it may require many more favourable years to restore the fields to their former state of prosperity,

because numbers of the miners have been compelled to abandon their workings on these fields and to turn their attention for a time at least to other pursuits, or perhaps to other gold-fields, where the difficulties of obtaining a water supply were not felt so oppressively as here. However, I believe all those who have left invariably look forward to returning here at no very distant time to their old places and occupations.

The yield of gold from the Jembaicumbene Gold-field has increased during the year 1879 by 123 ozs. 9 dwts. 14 gra., upon that of the year 1878, thus showing that the increased rainfall was of more immediate advantage to the miners on that field than to those on the Shoalhaven River Gold-field.

The quantity of gold purchased by the Banks from miners on the Shoalhaven River and Jembaicumbene Gold-fields during the year was 860 ozs., which at the rate of £3 13s. to £3 15s. per ounce gave a total value of about £3,200.

There have been several applications made to me during the past year under the Mining Board Regulations for the registration of extended alluvial claims, creek claims, prospecting areas, dams, races, &c., the various claims comprising an area of about 30 acres of old ground which has been partially worked and abandoned, and the races extending over distances equal to 13 miles principally re-opening old abandoned races.

A large protection area was taken up in new ground towards the end of the year by Messrs. Porter, Gane, & party, at Spring Creek, near Bungonia, the result of the prospecting of which will no doubt be known some time in the ensuing year. The same parties took up a large extent of ground under gold-mining leases at Still Creek, near Bungonia, and appear to be confident of success in their project, though I have not been able to ascertain the extent of their operations in consequence of the remoteness of the ground.

The discovery of gold upon land which had been held under a mineral license at or near Boro Creek was reported some short time ago by a party, but I have not heard with what degree of success the discoverers were rewarded. Other parties have been prospecting in that neighbourhood, and no doubt valuable discoveries of gold deposits will sometime be made there.

Silver.

There has long been a belief, supported by the geological surveys and reports made many years ago by the late Rev. W. B. Clarke, that silver exists in many parts of this division; and some years ago an old miner circulated the report that he had discovered a very rich silver mine in the mountain ranges at Jinglemoney, about 10 miles to the westward of Braidwood, the exact situation of which, however, he positively declined to make known to any one, unless he be first paid a large sum of money as an instalment of his reward for the discovery, and his story being looked upon somewhat in the light of a clever artifice to obtain money, and having very little truth in it. His demand was not complied with, and he indignantly left the district, without leaving any clue to the position of his alleged discovery. Many searches have since been made for silver in this division, and very recently, at Jinglemoney, a small parcel of stone as a sample, was obtained from the surface of the ground, and being assayed at the Department of Mines in Sydney, showed the existence of a small proportion of silver, besides a little gold. This result, however, was not deemed sufficiently encouraging to induce the finder of the stone to take further steps at that time to develop the mine. But there would appear to be abundant evidence of the existence of silver and other metals in this division to a greater or lesser extent.

Copper.

Copper also exists in large quantities in this division. At Mulloon Creek, about 30 miles to the north-west of Braidwood, and about 10 miles south-west of Boro, many indications of the existence of copper are to be found on the surface of the ground. Some time ago a party having a strong belief in the existence of a rich copper lode in that locality, took up a portion of land there, as a mineral conditional purchase, but I believe, from the want of the necessary capital they have not done any work on the ground, beyond sinking a shaft a few feet in the ground, in which was found a rich copper lode. This find should have been very encouraging to them, but of course without capital they could not turn it to account to their own or anybody else's advantage.

The greatest difficulty they will have to contend with when the ore is raised will be its carriage to a smelting works, unless such shall be erected on the ground, and even then the carriage of the copper in ingots under existing circumstances would be a large item in the expenses of production. But as the mine is in close proximity to a proposed line of railway to connect the vast country of Monaro with the main Southern Railway—if that line should be constructed, as it probably will be in the course of a few years—the difficulties of carriage will be to a large extent removed, and the mine might then be a very valuable one.

With reference to the obtaining of information and statistics of the mines in this division, I regret that I am unable to go more minutely into the details of all the various workings. This is owing to the scattered nature of the mining population rendering the mines and miners difficult of access; and the system of applying to them by letter in the form kindly supplied from the Department of Mines has not been of much assistance to me in that respect, for out of twenty-five or thirty of the principal claimholders to whom I applied in that way only three sent the required information, and the remainder led to no good result in so far as regards the object for which they were intended. Now this I think does not arise in all, though it may in some few cases, from an unwillingness on the part of the miners to disclose the nature and extent of their workings, and the results thereof. I rather incline to the opinion that it arises in very many, and indeed in a majority of cases, from an inability, under the circumstances, to supply the information as required, and perhaps in some cases from carelessness occasioned by the want of information or knowledge of the advantages likely to accrue to themselves or to the Colony at large from the preparation and subsequent publication of such information in the annual reports of the Department of Mines. And I think perhaps if a small fee for mileage, &c. were allowed to the Warden's Court Bailiff, or other competent person, and he were to go round to the various claims and collect all information, so far as may be practicable, with the assistance of the miners—who, if they did not at first care to assist, would, I am sure, after a time learn to appreciate the spirit in which the information was sought for, and being encouraged to keep accurate accounts of the results of their workings would be enabled to supply all information without much trouble—the desired result would be obtained, and the reports under the different headings would be made more complete, and a more accurate return of the quantities and values of gold and other metals and minerals gained in the division would be obtained.

SOUTHERN DISTRICT—ARALUEN DIVISION.

(E. F. Carlile, Mining Registrar.)

MINING in this division has been attended by various vicissitudes during the past year. In the earlier part of that period the drought continued with such rigour that ground-slucing was almost entirely suspended, and the large claims in deep ground could only wash at intervals; then in September serious and disastrous floods occurred, which swamped the whole of the stripping claims and did considerable damage to the box-tail races and the weather-board dams intended for their protection. This mishap threw a large number of men out of employment for some time, and when work was resumed it took a long time and cost each claim several hundred pounds to repair the damages; some have not got fairly to work again yet, although most are washing more or less. From these causes the yield of gold has not been nearly so much as it otherwise would have been; it is fairly within the bounds of probability that quite 1,000 ounces additional would have been obtained under more favourable circumstances, which would have made the out-turn considerably above the previous year's return. The amount won has been 4,526 ozs. 10 dwts. 9 grs. (viz., 4,403 ozs. from alluvial and 123 ozs. 10 dwts. 9 grs. from quartz and pyrites), of the value of £17,000. The price of gold has advanced during the latter part of the year, consequent on the abolition of the gold duty; the range has been from £3 8s. to £3 16s. 6d. per oz., the former for very poor, dirty samples, the general figure being about £3 15s. or £3 15s. 6d.

My efforts to obtain returns from individual claims have not been more successful than in former years, the same objection existing that I have before mentioned, viz., a disinclination on the part of many working on private ground to make their earnings known. In two cases, however, in which I have been fortunate enough to obtain information (see enclosed returns) the results show that a large quantity of gold has been obtained during the year—one party

reporting a gross earning of 1,625 ozs., valued at £6,125, and the other, 1410 ozs., value £5,209. It must be borne in mind, however, that these works are very expensive, indeed one of the parties informs me that the disbursements have been £250 in excess of the receipts; but that has been occasioned by the cost of opening in the first place, which was over £600, and re-opening after the flood at an additional outlay of £500. Since the close of the year, however, more than half the amount of the deficiency has been netted. Two claims are still engaged in re-opening, and one is opening afresh a piece of ground where good gold was formerly got. The general report from all the claims is that the shareholders are sanguine of success.

Less than usual quartz-mining has been done at Bell's Creek, and the miners must have come on a bad patch of stone, as the average out-turn per ton has decreased from 19 dwts. 6 grs. (for 1878) to 11 dwts. 3 grs. (for 1879).

One small parcel of pyrites has been treated at Bell's Creek, with a return of $2\frac{1}{2}$ ozs. to the ton.

SOUTHERN DISTRICT—MAJOR'S CREEK DIVISION.

(*John Heazlett, Mining Registrar.*)

In preparing this my statistical report for the year ending 31 December, 1879, I find that notwithstanding the fact that very little progress has been made in quartz-mining during the past year the quantity of gold obtained will compare favourably with that of the previous year, and that if all the drift made by the heavy rains in August and September of last year had been washed up and the gold disposed of at this place the decrease, if any, would be very small. I cannot say whether more gold has been sent direct to the Mint than had been in the preceding year, but think it probable, if for no other than the following reason, viz., since the abolition of the gold duty the buyers here give only 1s. per oz. over and above the price previously given, at which the miners grumble, but cannot help themselves, a few only being able to raise enough to forward to the Mint.

During the past year I have sold eighty-five miners' rights, being an increase on the years 1878 and 1877, and within five of the number sold in 1876. From this fact it does appear that this field is not yet exhausted, but the contrary, as with wet seasons the alluvium will yield more of the hidden treasure; and as regards quartz-reefing, it is in its infancy as yet.

I have made out two tabular statements—one for Long Flat and one for Major's Creek—so that it will be seen what is being done at either place. The figures given are only an approximation to the exact quantity of gold won. Very few, if any, keep a correct account of their earnings—indeed, the majority keep none at all; still the tables herewith will show what is being done in a few of the principal claims at either of the two places mentioned. It is to the gold-buyers I am indebted for what I believe to be an accurate account of the quantity of gold obtained, and admitting that a few parcels have been sold here from without my division, the gold sent to the Mint would be a set-off against it. Thus the sum total as shown in tabular form herewith may be taken as a pretty correct estimate of the yield of gold during 1879. During 1878 much gold was obtained from quartz. Not so in 1879; therefore it is quite plain that, with a supply of water—or, should I rather say, wet seasons—this division will continue to give forth a considerable quantity of gold independent of the quartz reefs.

Long Flat.—Mining at this place is being carried on in the usual way, viz., by puddling during fine weather and ground-sluicing in times of heavy rains; and by the latter means much of the earth thrown up as not worth puddling is sent away, when the drift which remains is found to pay for sluicing. Again, these loose heaps being cleared away solid blocks are discovered or laid bare, many of which are worth working. To the rains of August and September last is due the apparent increase in the yield of gold from that of the previous year. This flat, with a permanent supply of water, would give employment to five times the number now at work, and would last for many years to come.

Major's Creek.—The heavy rains of August and September, 1879, have left their marks on many claims, and amongst others those of the Chapel Flat are most conspicuous. No less than six different parties have cleared off a large quantity of old worked ground. The Messrs. Lewis, Royal, & Co. have made a great opening, also Archer, Cahill, & Co., and Dwyer & Co.,

also Heazlett, Keyte, & Co. The great openings made by these parties is due to the Back Creek Race, as it is termed, owned by Messrs. John O'Heir and E. Murphy, who made arrangements with the leaseholders on the flat to fetch their race thereto. I may mention that they have a large dam at the head of their race, and another within a few hundred yards of the claims, so that when the rain ceases, and the water becomes slack in the race, those dams are let go, when the claimholders are able to go on as if it were raining, and when empty are allowed to fill again, and so on, so that for weeks after a flood this race is of great benefit. Even when the weather is showery these parties are able to flood-off. Not so with the owners of dry races, which cease to flow immediately it ceases raining. In the tabular form herewith, headed "Chapel Flat," it will be seen by the figures set down opposite the initials of the several parties that much has been done which could not have been done without the wet season.

Back Creek.—There are only a few parties at this place. The creek has been worked, and although the rising ground on south-eastern side of creek would yield much gold the private land is in the way of fetching water.

Berlang.—Here a few parties—settlers—work during heavy rains, and do very well while the water continues. Not a few are under the impression that good quartz reefs could be found; but, like other places, freehold land and conditional purchases are in the way.

Quartz-mining.

I have already said that little has been done during the past year. I am glad, however, to be able to state that at the present time there are evidences of a material change for the better, as what is known as Dargue's Old Reef at Spring Creek is now taken up by a Victorian company, with Mr. Edwin Field as manager and part proprietor, who has a number of men at work erecting dams, and also a battery of ten stamps. These dams are an easy distance from the mine, and the crushing mill is situate within a few feet of the reef. Mr. Field is pushing on the work with all speed, so as to be able to commence work early in this year. This reef is from 10 to 36 feet wide, and there are three shafts of about the following depths respectively:—60, 62, and 72 feet, the stone from which is said to have yielded from 4 to 8 dwts. to the ton free gold, and from 2 to 3½ ozs. per ton from the mundic. It is expected that, when all things are ready, this claim will employ fifty to sixty men and boys. This would prevent so many from going to road or other work during the dry seasons. In reference to Messrs. Field & Co.'s lease at Big Hill, Major's Creek, I may state that during the year 1879 repeated trials of the pyrites have been made, both here and in Victoria. On this creek the treatment was a signal failure, although superintended by one who was supposed to understand his business. In Victoria a process is in operation for extracting the gold from the numerous metals with which it is associated, and the proprietors of the abovenamed mine are endeavouring to induce the owners of the process to erect works at Major's Creek, and it is expected they will do so early this year. Hence suspension of the labour conditions of leases Nos. 10 and 12 has been granted to allow time for the erection of the plant. This mine has a shaft nearly 200 feet deep, and one about 70 feet. A large quantity of stone can be taken from the deepest shaft before any further sinking need be done. The proprietors have a crushing machine of twelve stamp-heads within a short distance of the mine. This mine and the one at Spring Creek are not far apart, so that any works which may be erected will be convenient to both.

Messrs. Dunslea Brothers are working a pipeclay reef or vein at Red Hill with but small profits, but, having their own mill, think it as well to keep it going with the hope of finding something better.

The miners regret that the waters of Shoalhaven River cannot be brought on to this field. Many of them had been and are still under the impression that it can be done, and, from information recently obtained, I am not surprised that they have long entertained such a notion.

SOUTHERN DISTRICT—LITTLE RIVER DIVISION.

(*P. James Galway, Mining Registrar.*)

In furnishing report for 1879 I am happy to state that the rainfall during the year has revived the hopes of miners. Returns from the water-races have on the whole been satisfactory, and had sufficient labour been obtainable for ground-slucing the losses sustained by the past

dry seasons would have been materially lessened. Now that there is a chance of a return of the seasons usual in this division previous to the drought experienced here during the past few years a return of miners who know the field, and who in many instances abandoned races on which large sums had been expended, may confidently be expected.

The want of proper reservoirs to retain the flood waters is a great drawback to mining in this division; the reservoirs at present erected merely store the water that collects during the night. From the natural facilities in the district reservoirs to contain water for supplying the races for months could be erected at a cost which, compared to the benefit to be obtained, would be very trifling.

In this opinion I am sustained by a skilled officer of the Mining Department, who, having occasion to visit this division during the past year, was so struck with the facilities afforded for water storage that he was surprised that race-owners had so long neglected to erect reservoirs that would contain such a water supply as would return the expense of erection in a short time.

This defect will I hope be remedied, and capitalists interested in the property of the Braidwood District may come forward to develop this gold-field, which shows, either in alluvial or quartz mining, a sure and certain return for capital judiciously expended.

I have had the honor of forwarding in previous reports the returns from the quartz reefs, and that only to a small depth, and now enclose return of nuggets found here from 1856 to 1878.

A list of nuggets found during 1879 is attached to this report, and must strike the attention of parties interested in gold-mining as showing the richness of the field. I beg to state that, unlike other gold-fields, where the coarse gold is usually found in one particular locality, here it is found over a space of 30 square miles.

The quartz reefs still remain idle; but an agent representing a Victorian company has been prospecting some of the reefs, and has been favourably impressed with their appearance.

The freshes during the wet weather has caused Chinese to stop working in the river-bed; when satisfied with the prospect of suitable weather they will resume work.

Nuggets found during 1879:—

			ozs.	dwt.	grs.
March.....	Ah Coy	Riverbank.....	8	14	0
„	Robt. Huff	Wyse's Hill	4	14	0
„	„	„	1	7	0
June	E. Sillick	Sweper's Gully	10	1	12
Oct.	John Oakes	Broad Gully	32	15	0
Nov.	John Hubback	Warrambucca	3	12	0
„	Wm. Davis	Jamtulean	4	0	0
„	John Oakes	Broad Gully	7	2	0
Dec.	Henry White.....	Wyse's Hill	8	7	0
„	„	„	0	19	0
			81	11	12

SOUTHERN DISTRICT—NERRIGUNDAH DIVISION.

(*Archd. M. Smith, Mining Registrar.*)

I HAVE the honor to forward report of the mining divisions under my charge.

Nerrigundah

This field may be termed abandoned ground, chiefly worked by Chinese, confined to creek claims, there being no alluvial leads in the vicinity of the Gulph. All quartz-reefs opened up some years ago are deserted; from time to time an effort is made to discover a payable reef, hitherto without satisfactory results. Prospectors are, however, still sanguine of success, insufficient funds alone preventing them from prosecuting the search effectively.

Dromedary.

Mount Dromedary is gold-bearing from the summit to the base, having numerous small leaders of decomposed quartz and granite impregnated with iron, which may be compared to the

branches of a tree, bearing east and west, without any well-defined reef having yet been discovered. The formation of this mountain is peculiar. The base for a considerable distance upwards being composed of trap, while the apex is granite; the surface chiefly large detached granite boulders, with loose decomposed granite of very fine texture, easily sluiced, leaving tailings of small quartz containing gold. Some of the claims are yielding very good returns, and the miners generally are contented, making fair wages.

Cowdroy Brothers, owners of the original prospecting claim, Dromedary Reef, are at present erecting an eight-stamper battery, portion of which is in position, and will be ready to crush about the end of February, 1880; the machinery to be driven by a Turbine wheel. In this claim there are two tunnels on the lode—one cuts it a depth of 70 feet from the surface, the length of which is 150 feet; the other cuts the vein at 190 feet from the surface, and is 310 feet in length. There is also another tunnel, 100 feet long, following a vein at a depth of 50 feet from the surface, unconnected with the main lode. There is a shaft at present sunk 70 feet. The gold hitherto obtained from this claim has been by sluicing, and in payable quantity. Fifty tons of small quartz at grass waiting the erection of the plant referred to. This battery will benefit the miners on the southern slope of the mountain, as a siding could be constructed to truck stone to be crushed.

On T. Allen's claim, adjoining the original prospectors, a considerable amount of labour has been expended in tunnelling and sluicing, with what result I have been unable to ascertain.

In Latimer and Read's Prospecting Claim (amalgamated with Nos. 2 and 3 east) on the Star of the South line of reef, on the southern slope of the mountain, the reef was found in working the alluvial in the creek, a tunnel being driven. The reef or lode was cut at 40 feet, running east and west, showing a shoot of very rich gold about 10 feet in length, and continues to carry payable gold as far as it has been driven—250 feet. About 1,000 feet east this is again cut, showing on surface some free gold and large quantities of iron pyrites. About 400 feet westward the reef is struck gold-bearing. This reef is small, not exceeding 12 inches in the widest place, showing a tendency to enlarge under foot with a very slight underlay to the north, yielding an average of 62 ozs. 6 dwts. 12 gra. gold per ton of decomposed granite and quartz, of which the reef is chiefly composed, the quantity treated amounting to five tons from the best portion of the ground giving this result. The prevailing opinion amongst the miners on the Dromedary is that a reef exists which, if discovered, will prove to be of great value; the leaders or veins all run nearly due east and west, with an underlay inclining slightly to the north. Capital is required to provide suitable appliances to develop this field, which, under proper management, would from the commencement pay the labour employed.

On all abandoned gold-fields there are to be found old miners deluded enough to continue fossicking all their lives on worked out ground, positive fixtures, merely existing, and hopelessly in debt. Nerrigundah is no exception; the average yield of gold per man is consequently much in favour of combined Chinese labour, so trifling are their gains, that it would be more consistent with facts to deduct their number in order to arrive at a fair average of gold produced per legitimate miner.

Number of miners of all nations in the divisions of Nerrigundah and Eurobodalla.

	Nerrigundah.				Dromedary.	
Chinese	90	6	6
Europeans	25	50	50
Total	171	171

Gold produced.

					ozs. dwts. gra.		
Nerrigundah	...	...	...	...	554	8	6
Dromedary	...	...	...	...	1,092	5	21
Belimbla	...	...	...	...	3	2	20
Total	...	...	...	...	1,649	16	23

Value—£6,264 14s. 6d.

There has been no quartz crushed during the year, so that the above may be classed *alluvial*.

The price of gold has slightly advanced, possibly owing to greater care in cleaning, irrespective of 1s. 3d. duty abolished.

The ruling price for Nerrigundah, £3 19s. 9d., £4; Dromedary, £3 13s. 3d., £3 14s. 3d.

Black sand, whether antimony, tin, or silver (unknown), upon which the magnet has no effect, causing variations in the price of the latter.

Value of mining plant in the divisions, £800—*idla*.

No shafts at work; the deepest 100 feet.

The system of working is at present by tunnelling and sluicing.

The area of auriferous ground at Nerrigundah actually worked upon at present and in past years has been computed at 3 square miles. Although the Dromedary south extension embraces an area of 240 square miles, the quantity of ground which is being, or has been worked, is insignificant, certainly not equal in extent to the workings at Nerrigundah up to the present time.

SOUTHERN DISTRICT.—NOWRA DIVISION.

(*W. Lovegrove, Mining Registrar.*)

THE Dangera or Yalwal Creek runs between very steep hills, and the workings are all confined to 1 mile of ground, partly on the east and partly on the west of the creek. The owners have endeavoured to get along without forming companies, consequently the work is not steady. A successful crushing enables them to do dead work, but if unsuccessful, expenditure is reduced at once. Provisions are cheap, and their port, Burrier, is about 8 miles off. For want of a little capital the waterwheel battery has only been able to work five out of ten stamps. The Fernbank 10-stamper battery has been idle for some time, the proprietor not being able to agree with the miners as to the price of crushing. The 5-stamp battery formerly worked by the Pinnacle is working, but is for sale, being considered too light to be economical. The Eclipse, a powerful 10-stamper battery, has been doing good work since starting, principally on the stone belonging to its owners, the last parcel of which turned out 3 ozs. 14 dwts to the ton, and has cleared them of all difficulties in work. Their lease is worked from a fine tunnel, 150 feet long, with a tip about 200 yards from the battery. I am told that since crushing they have come on stone so rich that it was put in the safe, but they will have a second lot of 150 tons ready for crushing ere long. Some of the leases have been forfeited and retaken since my last report, and some new ground has been taken up and work started on it. Two brothers named Keiller started on fresh ground and have realised from a first crushing of surface stone about 15 dwts to the ton, about one-half of that being clear profit. A new lease west of the Pinnacle has driven 60 feet of good tunnel, and generally things look healthy. The gold still gives 14 to 15 per cent. of silver. The Pinnacle mine is registered for six months, being managed by a board of directors in Sydney. One of the shareholders is about taking out 100 tons of stone on some tribute arrangement. In round figures the value of the output for the year has been over £4,000, nearly all out of three claims, and probably equal to the work of twelve to fourteen men for six months.

As far as I can gather the returns, the whole average is about 15 dwts. to the ton, and there is scarcely any mullock.

Referring to my annual report, wherein I stated that the Eclipse Company, at Yalwal, expected to crush again in the beginning of February, I have now the honor to state that they have just finished 100 tons, and have brought into my office a cake of gold weighing 474 ozs. 17 dwts. 16 grs. It is very cleanly retorted.

SOUTHERN DISTRICT.—MORUYA DIVISION.

(*William Clarke, Mining Registrar.*)

ANOTHER year having terminated it becomes my duty to furnish a report upon mining in my division. Matters have improved but little during the past year, but I hope at the end of the present year to be able to furnish a more favourable report, as several prospectors are now out,

and if they be successful—and I believe they will be if they persevere—some experienced miners with a *little capital* may be induced to give the district a fair trial, and see what they can do with both new and abandoned ground.

Kelly and party did not bottom their shaft (situated in the parish of Tomaga, and referred to in my last report), being unable to cope with the water, and were obliged to abandon it.

John Stevens and Charles Stevens have been working their alluvial ground, situated on Dwyer's Creek, since the registration of their stream water-rights on the 19th July last. The former won 12 ounces of gold at a depth of from 12 to 13 feet sinking, for which he obtained £3 12s per ounce, and, therefore, his earnings amounted to about £1 15s per week; the latter won 18 ounces of gold, for which he obtained the same price, making his earnings about £2 12s per week; depth of sinking from 7 to 8 feet. Peterson and party registered their title to a water-face and water-right at Brimblamala Creek, near Sullivan's farm—date of registration, 9th April, 1879—but did but little work, and have left the ground. The rest of the mining consisted of prospecting, "or fossicking," and was alluvial and confined to the usual localities, with the exception of a small quantity of quartz crushed at "the silver mine."

It is to be regretted that that valuable lease known as "The Moruya Silver Mine," situated at Dwyer's Creek, does not fall into the hands of some enterprising person or company, as not only would it be a valuable and remunerative investment, but the value of the ore and quartz being thereby made known, it would perhaps give an impetus to mining throughout the district.

The usual returns are forwarded hereunto annexed.

SOUTHERN DISTRICT—NERRIGA DIVISION.

(Samuel Woollan, Mining Registrar.)

I HAVE no improvement to report, I regret to say, in mining matters in this division for the present year. Operations are confined to alluvial workings in the Shoalhaven River and the small creeks leading thereto. No machinery of any kind is either at work or idle in the division, and I am unaware of any prospecting worthy of the name either in quartz or alluvial.

SOUTHERN DISTRICT—BOMBALA DIVISION.

(James Giles, Mining Registrar.)

I HAVE to report great dulness in mining matters at Delegate during the past year; the gold-miners are nearly all Chinese. I have experienced much trouble in compelling them to take out miners' rights; the actual number issued by no means represents the number of persons employed in gold-mining on Delegate.

SOUTHERN DISTRICT—GUNNING DIVISION.

(John F. Kenyon, J.P., Mining Registrar.)

I REGRET to state that, with the exception of a little fossicking, alluvial mining is quite neglected in this division, although gold can be found in nearly every creek in the district by sinking a few feet; but people seem to be becoming more alive to the importance of mining, and I look for a much better state of things in the present year. The only quartz claim or reef at present working is the one situated about 2 miles from Dalton, the prospects of which I am informed are highly satisfactory; but as their operations for the past few months have been confined to erecting machinery, raising stone, storing water, &c., I am not in a position to state what the yield per ton will be, but a small sample of the stone has been forwarded to the Mint, and the result was over 8 ozs. to the ton. I have found it quite impossible to obtain any reliable information with reference to the number of miners in my division, and have only issued fourteen miners' rights for the year 1879, I am unable to forward any of the printed forms sent me with your letter of the 27th November, as none have been returned to me.

I trust to be able to give you a much better report of my division for 1880 than this.

SOUTHERN DISTRICT—BEGA DIVISION.

(John Davis, Mining Registrar.)

IN reply to your circular of November last, asking for statistics in connection with my annual mining report, I have the honor to inform you that I have forwarded that report ("Nil"), and have no statistics to give, there being no mining business now carried on in this district, and all the gold that has been sold in Bega having come from the Dromedary, with the exception of a very small quantity from Nelson, obtained by one or two men who are fossicking about, but have no regular claims.

The amount of gold purchased in this southern extremity of the Dromedary Gold-field I have the honor to return, as follows:—

1879.	Dromedary.			Nelson or Tanja.		
	oss.	dwts.	grs.	oss.	dwts.	grs.
January	46	10	13			
February	46	13	9	5	15	4
March	127	1	16	1	4	0
April	104	0	22	3	17	20
May	49	10	20	1	1	6
June	43	14	6	0	18	6
July	46	1	9			
August	58	19	6	2	6	12
September	54	18	6	0	3	0
October	11	15	15	2	2	4
November	21	8	2	0	5	18
December	62	16	8			
	673	10	12	17	13	22

TUMUT AND ADELONG DISTRICT—TUMUT DIVISION.

(Mr. Warden Vyner, P.M.)

In furnishing the annual report upon that portion of the Tumut and Adelong Mining District under my charge there is not much cause for congratulation as to either the present state or future prospects of these gold-fields.

After the abundance of rain that fell during last autumn, winter, and spring, removing one of the alleged causes of stagnation and depression, I had hoped to be able to give this year a brighter account of mining prosperity than has been possible for some years past, but I am disappointed.

At Adelong and elsewhere most of the old reefs have been abandoned or so declined in their yield of gold that the present working of them is unprofitable.

In alluvial mining, with the exception of one or two noted claims, none are paying more than very moderate wages.

I feel pretty sure we shall have no change for the better till new ground has been discovered.

A little prospecting has been done at Tarcutta and Hillas Creek and that neighbourhood, but at present without any very marked results of a favourable nature.

Since the late rise in the price of copper one or two of the abandoned copper leases at Wyangle have been again taken up with the intention of giving them a thoroughly good testing, and at the copper mine at Snowball the work is being carried on with a very fair prospect of increasing success.

TUMUT AND ADELONG DISTRICT—ADELONG DIVISION.

(Mr. Warden Brownrigg.)

WHEN reporting on the gold-mining operations in this district for 1878 I was constrained to remark that this industry had all but died out. In my present report (1879) I have to state that some slight indications of its revival are just now observable, at least as regards the Black Range Gold-field and the Nailcan Reefs.

At the former some few claims have recently been taken up on the May Day and Ethiopian Reefs. A new reef in the Portuguese Gully is also being tested, and the One-tree Hill Company have continuously, as in 1878, worked their claim throughout 1879, doing, however, little more, if that, than paying their way, employing on an average ten men, the value of the gold raised being under £700.

With reference to the Nailcan it would seem that a decided effort is now being made to thoroughly test the value of its reefs. Several claims are now being worked, and the prospects already obtained appearing to be sufficiently promising, a crushing mill has within the last few weeks been erected in the immediate vicinity, and is now in full operation. No result yet declared.

The mill consists of 5 stampers, of 8 cwt. each, worked by an 8 horse-power engine, and is fitted with all necessary appliances of the most improved character. It is said to be equal to crushing between 80 and 100 tons of quartz per week.

As the proprietor (Mr. Reeves) has taken a large interest in the reefs now being operated upon—it may reasonably be presumed that he will use his utmost endeavours to the development of their gold-bearing value—it is very desirable that Mr. Reeves's enterprise, which merits a successful result, may induce others to follow his example and give the Nailcan Reefs a substantial trial.

Turning to the gold-fields at Yarrara and the Four-mile Creek, I regret to have to report a total collapse of all gold-mining operations on these, at one time, promising fields. All the claims, and all the machinery (valued at £3,600) connected therewith, are abandoned, and a resumption of work very improbable, although a favourable opinion is still entertained by the parties interested in the Perseverance and Rangattie claims that with sufficient capital at command they would prove payable.

TUMUT AND ADELONG DISTRICTS—TUMUT DIVISION.

(A. Milton, Mining Registrar.)

MINING still continues in a depressed condition in this place. A good many scattered parties are at work at Sandy Creek, Shaking Boy, &c., but their earnings are precarious, and their operations are often conducted in a somewhat primitive manner. Auriferous indications are scattered over a large area of the Tumut District, but capital and proper appliances are required fairly to test and develop the ground.

The forfeited leased claim held by the Great Britain Gold and Tin Mining Co., after some legal contention between Croker and party and Fitzgerald Bros., became the property of the latter; and though considerable damage was done to some stripped ground and the tail-race by a storm, good hopes of rich returns from this ground are entertained.

At the late Consolidated Lacmalac Co.'s mine, Messrs. Fraser and Emanuel have had some crushings of surface stone with fair results, and have been employed in draining the main shaft. Operations were delayed owing to the breaking down of a portion of the machinery; but a new pump has been procured from Sydney, and the drainage having been accomplished, work will be vigorously proceeded with. There are two small but rich leaders at the bottom of the shaft, which it is believed will make into the main reef lower down.

The escort returns give a fair idea of the amount of gold obtained here, but some Chinamen who are at work disposed of their gold privately. Last monthly escort, on January 6th, 1880, took down 163 ozs. 15 dwts. 6 grs.

The duties of Mining Registrar here are at present very light, and the remuneration is also insignificant.

TUMUT AND ADELONG DISTRICT—ADELONG DIVISION.

IN submitting this my report for the year ending 31st December, 1879, I am, I regret to say, unable to report much progress, so far as the quantity of gold is concerned. Attention has been given to several outlying districts, in all of which gold in payable quantities has been found. At Lower Tarcutta, which is situate on the Main Southern Road, distant from Adelong about 21 miles in a south-westerly direction, there has been a small rush, but never more than fifty men have been working at any time. A prospecting claim was taken up by Collier and Chesson; they had a trial crushing of 2 tons of quartz, the yield being 23 dwts. The reef runs north and south in one direct line for miles. Three claims north and three south of the prospecting claim were applied for; a second crushing of 16 tons only yielded $3\frac{1}{2}$ dwts.; this was an unlooked for change; it is supposed some other mineral exists that runs out the gold. The result of this crushing caused most of those on the reef to abandon their claims. The prospectors, not feeling satisfied, are now getting stone, looking well, from the hanging wall, and will have a third trial. Should this come out well, it is in contemplation to erect crushing machines, which, I am convinced, would pay; the stone is near the surface, and reefs run in all directions. These ranges were prospected about twelve years since, and the books at the machine (Wilson and Co.'s) show a return of 15 dwts.; this would not pay for carting a distance of 21 miles. About 4 miles from these claims a party are at work; they have come upon a small leader; it is about $1\frac{1}{2}$ inch, and shows gold all through. Messrs. Sill and party consider it will yield many ounces to the ton. Hillas Creek, about 6 miles from Tarcutta, in an easterly direction, have four or five claims at work. O'Dwyer and party, the prospectors, took up an area in Digger's Paddock, and had a trial crushing at the Adelong machines; this stone only went 5 dwts.; this would pay if a crushing machine was on the ground, but would not pay to cart 16 miles to Adelong. O'Dwyer then prospected another part of this paddock, and found stone of richer quality, and will have a trial crushing, after the Christmas holidays. Butler and party, No. 1 south, had a crushing of 16 tons, which returned 17 dwts.; these men think of erecting a machine. Mount Adra, about 5 miles nearer Adelong, was a busy scene for about a month; six or seven claims were taken up, and a quantity of stone crushed, but it was not payable. Four miles east of Mount Adra is Sharpe's Creek. There are two alluvial claims working, Webster and Quinn, and Deedrich and party; these men are making good wages. Getting nearer home we come to Wondalga. The country here is very wet, and small parties cannot obtain proper appliances, yet the return, according to a trial of 20 tons, showed about one ounce and a quarter to the ton. I am of opinion all the ground I have named is payable, if batteries were near the works. It is strange that capitalists do not turn their attention in this direction. Should the department send an inspector, or a practicable gentleman like Mr. Wilkinson, to report, I am of opinion these large tracks of land would be worked with profitable results. Alluvial diggings up the creek have done well during the past four months, and have helped to swell the escort. There are a number of Chinamen working in the gullies and tributaries to the creek. These men are very difficult to understand, and reliable information hard to obtain down the Adelong Creek. The alluvial claims are payable. Mr. A. D. Shepard's claim, since the repairs after the flood have been completed, have done even better than before. They have been at work five weeks only. The gold obtained, after paying wages and all expenses, enabled the manager to place £1,200 to credit. This must prove how much better it is to form large companies, with machinery, pumping gear, and other appliances. I have my information from practical miners, who know the ground between Graham's Town and the Adelong Crossing-place—a distance (as the creek runs) of nearly 20 miles. Rich deposits are known to exist, but small parties fear to commence operations on a small scale.

I now come to our quartz claims on the Adelong, numbering about thirty in all. The reports from the managers of these companies will perhaps convey a more correct view than I am personally able to convey. I feel confidence in asserting mining is now on a firmer footing than it has hitherto been, as the return of miners' rights will show. During 1877, 260 rights were issued; 1878, 350; 1879, 407. Every facility is afforded the miner at the office, and information for his guidance is readily afforded. The following claims have sent in returns:—

Collins and Doudle, alluvial claim, Hillas Creek, near Tarcutta, report the ground is near worked out. They have made about £3 to £4 a week per man up to date, 31st December,

1879. The wash-dirt is about from 10 to 15 feet from surface. They have a race about 2 miles long.

Endeavour Gold-mining Company—Thurloway, Hepburn, and party.—The Endeavour Gold-mining Company was commenced to be reworked about twelve months since. It was formerly known as the Camp Reef, and was abandoned owing to the wetness of the claim. Thurloway and party have been putting in a tunnel, and have about 50 feet more before it reaches the claim. This tunnel was adapted to drain the claim. They have driven about 150 feet. Very poor ground; the water will run in a southerly direction into the Adelong Creek. They have raised no gold during past twelve months.

Before closing this report, I may mention the common cause of complaint amongst our miners is the temporary common, and, until provision is made by the Government, little or no improvement will occur. The reefs are all on reserved land. No ground can be leased or taken up under miners' rights until permission to do so is granted, and then through the tedious process of applying under the 28th clause; whereas mining under the temporary common would in no way interfere with herbage, and stock would still be able to run, except in cases where portions might be fenced, and that would be only a small proportion. Certain it is, within a circuit of 2 miles around Adelong, the ground, as far as new claims are concerned, must lay dormant until such time as action is taken by the Government, which I trust will soon have attention, for, as matters stand at present, nothing more injurious to trade, to the mining interest, and the general good can exist than the locking up our rich auriferous land.

In the present state of things it is impossible to give a decided opinion on mining in this division; but I have no doubt, could capital be obtained, the commons made free to mine upon, there are numerous claims which could be worked with profitable results. It seems, however, that these reefs turning out profitable must depend upon the energy and perseverance of the working miners themselves; and I do not think these qualities are wanting in our mining population. Those claims which are working, as a rule, are doing well. They are raising payable stone, and earning good wages. It is a well-known fact that miners, as a rule, are not capitalists, even though they number some amongst their ranks who have been unusually fortunate. They are often aware of mining property which can be profitably worked by the aid of capital, but they are unable to procure it; their own labour they would freely give. Now, as I am possessed of abundant evidence from reliable miners, as well as my own observations, that only an infinitesimal part of the Adelong Creek has been worked, and owing to the great amount of water to contend with no mining has been carried on to any extent, I can with much confidence give it as my opinion that even the old workings about Graham's Town, to where the Adelong Creek intersects the Murrumbidgee River, would by working by steam-power turn out immeasurably more gold than was realized in the best times of alluvial on the creek.

This gold-field is greatly improving. It had been much neglected, and miners worked (many of them) without miners' rights. The two past years show an increase of miners' rights issued.

There is also an increase on the value of gold. During the year 1878 the quantity deposited in the Adelong Banks was 9,910½ ozs., value £38,650 19s.; for the year 1879, the value of gold was £42,946 1s. 5d. At a rough calculation, I consider the Chinese send away and sell to storekeepers some thousand ounces each year.

I am of opinion mining on the Adelong Gold-fields will during the year 1880 show great improvement on the past three years.

TUMUT AND ADELONG DISTRICT—GUNDAGAI DIVISION.

(C. W. Weekes, Mining Registrar.)

I REGRET that I am unable to report any improvement in mining operations since my last report, for the year 1878.

At different times during the year attempts have been made to strike the old leads that were worked successfully in many parts of this district in past years, but hitherto the result has not been encouraging.

A good deal of prospecting is now going on, both in old and new ground, for either reef or alluvial gold, and there appears a better chance at present than has existed for many years past of the country being thoroughly prospected.

The recent discovery of gold in connection with asbestos close to this town has not yet, I am sorry to say, resulted equal to the sanguine anticipations of the proprietors. The gold ran out at a moderate depth, and the company are now sinking in the hopes of picking up the run again at a greater depth. I sincerely trust their efforts will be successful, as the spirit with which this affair was taken up augured well for the future mining prospects of the district.

The asbestos has not been worked very extensively yet, but there are said to be large and continuous orders expected from Home and the Continent. It is said there is likely to be a demand for this in America also.

Many of the abandoned gold reefs on Kimo's Ranges and up Jones's Creek are being vigorously prospected, but with no result as yet worthy of special record.

TUMUT AND ADELONG DISTRICT—KIANDRA DIVISION.

(Chas. E. Stoyles, Mining Registrar.)

I HAVE the honor to forward herewith my annual report for above year, but owing to great difficulty in collecting information I am unable to report as fully as would wish.

There have been no new claims opened or shafts or tunnels put into the various hills this year; those persons with any capital are chary of laying it out in a speculation that must yield good returns. For instance, Township Hill, lying at the western side of Kiandra, has yielded some fine samples of clean gold, and old miners all agree that within the hill there must be heavy deposits. I trust at some future day my remark will be proved.

The past season, I am informed, has been a very fair one, though more water would be very acceptable. Miners here work three to four months each year, and are able to support themselves on their returns; this fact alone speaks of the rich country in this division.

At the Fifteen-mile two men still work on, making fair returns, though for six months heavy snow 3 feet deep on an average debars their uninterrupted labour. At the Eight-mile very fair returns were brought in—fine samples, some extremely fine and clean, others coarse and nuggety, showing that good deposits must be near the vicinity.

The Three-mile is worked by three or four miners (three Chinese and an occasional European), who seem to be contented with returns.

At Six-mile a claim has been taken up by a new party. Abandoned claims seem to be receiving some attention now that gold is not so easily won.

Four and Nine mile seem to be progressing steadily, about twelve men working in these two places and making good wages.

As I notice the annual report for 1878 touches upon the formation of this country, it is needless to repeat what inexhaustible sources there are for miles around.

The exceedingly severe winters (though fine summers) seem to frighten down country miners from giving these hills a fair trial—a trial which time and capital alone can afford.

Messrs. Drummond & Nuttall still continue their works into the New Chum Hill, and are about 1,300 feet in. The gold won is a very good sample, being clean and of best quality. The tunnel is well put together, having taken years to bring it to the present fine condition.

The machinery of Messrs. Towns & Co., for some time past located at New Chum Hill, and used at the Great Emperor Tunnel, is about to be removed to Adelong, having been purchased by Mr. John M'Lennan, on account of B. Molyneaux, Esq., of Sydney. Of course we regret to notice machinery leaving, as it is the general opinion that had the Emperor Tunnel workings continued another month or two great things would have turned up; however, we have good hope for the hill yet.

This division has produced (as near as average calculation can go to the mark) about 1,500 ozs. of gold. (This includes the Adaminaby Gold-fields of this division.)

Though good tidings were expected at the end of the year from Adaminaby, I regret to have to state that the land has not turned out according to expectation.

There are no quartz reefs working at present, though, as stated, Charcoal shows good leads, and capital again must be exercised to do any good at that reef.

The total amount of miners' rights issued was	...	...	156
Business licenses	...	...	20

Country very hilly, and miners prefer trying the flats, many of which (for about 12 miles around) show the unmistakable signs of prospectors' shafts, and it is stated gold can be found in any part of these shafts, though not in quantities considered really payable, high wages here being expected and water scarce.

In conjunction with the returns of my division I do myself the honor to forward herewith a general yearly report.

Messrs. Chapman & Sharp report a receipt of about	...	...	1,000
I have calculated from Chinese about	...	...	300
Amount privately disposed of about	...	...	200
			<hr/> 1,500
Machinery in working order	...	...	Nil

There are no yields of tin, copper, or coal.

The tunnel worked by Messrs. Drummond & Nuttal, of New Chum Hill, was the only one worked during 1879, and at present in working order.

There are about eighty Chinese and forty Europeans in this division.

Though these miners can only work five months of the year, their returns are sufficient to keep them, showing what wealthy resources Kiandra has, if *water* or *capital* were procurable or available.

In this division are some very interesting limestone caves, from which I purpose forwarding to the Mines Department a case of stalactites at as early a date as possible.

TUMUT AND ADELONG DISTRICT—QUEANBEYAN DIVISION.

(*O. Willans, Mining Registrar.*)

I HAVE the honor to report in reference to the only quartz reef now working in my division (that at Micalago) that there is a new set of miners now employed there since May last. These miners seem to know more about their business than Messrs. Hayes, Duolin & Co., who held it the year before last. Their return, however, for the year does not seem very encouraging, namely, 71 ozs. out of 180 tons of quartz; but I believe they fully account for this in their written report to me, and which is transmitted herewith for your information. The number of miners' rights (9) sold by me during the past year shows that there is not much doing in my division of the district in gold-mining, and I am not aware of any other mining being now carried on in this division.

TUMUT AND ADELONG DISTRICT—YARRARA DIVISION.

(*John K. Armstrong, Mining Registrar.*)

So little has been done in the way of mining on this gold-field during the last twelve months that it can scarcely be said to deserve the name of having an existence. The quartz reefs throughout the year have been entirely abandoned as far as any actual work is concerned.

All the machinery, two crushing machines, one engine and pumping apparatus, a whim or two, formerly, valued at between three and four thousand pounds, have during this last year been completely idle.

The manager and part owner of claims and machinery, Mr. Thomas Martin, made every effort in his power, having considerable faith in one or two of the mines, to have mining operations resumed, but without the least success; and finding any longer stay at Yarrara most unpromising and useless, took his final departure about two months since, leaving claims and machinery and all, as they stood, behind him. His idea about the mines appeared to be that the Perseverance and Rangatira claims were worth further trial, and would eventually repay the outlay.

With regard to alluvial prospects, during the early part of the year, six or seven miners had been at work sluicing on the creeks. In July a party of four tried a claim in some wet ground, about 12 feet deep, on Copabella Creek, but not finding it payable left after a few weeks. These were exclusive of Chinese, of whom there are twelve or fifteen here and there about the creeks occasionally mining, but chiefly employed at tobacco culture, with what success in either pursuit it is not by any means easy to say, but judging from their own and from the far more reliable source of appearances, neither to be much depended on in the case of Chinese, they find it difficult enough to gain a livelihood.

At the present time but two European diggers remain on the field, and these two are only working separately, sluicing in a small way.

A recent rush to the jib on the Victorian side of the Murray has induced a few hands from this neighbourhood to try their luck there. That most of these will return before winter sets in I think highly probable.

As for coming within an approximate range of the gold won by these scattered and shifting miners it would be absurd to expect with much certainty. However, the best calculation I can make from what I know and have observed, I should say that 150 ozs. of gold-dust would be about the amount obtained for the year, the average price being £3 14s. per ounce.

But in spite of all this unfortunate depression and desertion it is my belief, and that of others much more experienced, that the time is not far distant when, both in reefing and alluvial, this part of the country will become much more productive than hitherto.

The gold is very fine and wide-spread, and difficult to save with rude appliances, but when labour cheapens and the knowledge and means of saving gold increases fresh and doubtless successful efforts will be made.

TUMUT AND ADELONG DISTRICT—ALBURY DIVISION.

(*James C. W. Orommelin, Mining Registrar.*)

GENERAL report upon the state and progress of the mines in the Albury Division, year 1879.

There has only been one company at work this year, the One-tree Hill, but latterly a good many claims have been taken up in the following places, viz., the old Nailcan Reef is now going to be worked again; a new battery has been erected of 5 stampers, driven by an 8 horse-power engine, and stone is now being got out in three claims, showing very fair prospects. This is a poor man's reef, insomuch as that a person having a couple of horses and dray of his own could start from the very surface of the ground and obtain fair to good wages by carting everything to the machine, as there is gold all through, more or less.

Two new claims have been taken up at the old May-day Reef, one has been taken up on the Ethiopian Reef, and a new reef has been reported as struck in Portuguese Gully. Altogether gold-mining is looking up. None of the claims above mentioned have had a crushing as yet, but early in 1880 the trial crushings will be put through.

The diggers were talking to me about the revocation of part of the Black Range Gold field, and saying that it comes very hard on them, as trusting to do better in the future they have erected their huts on the ground that is now to be cut up and sold by auction. A petition has been sent in on the subject, I believe. There are only two or three men working in fits and starts at alluvial mining, and they don't keep any account of how much they get themselves.

TUMUT AND ADELONG DISTRICT—TUMBERUMBA DIVISION.

(*H. M. Langford, Mining Registrar.*)

THERE have been no new discoveries in this division worthy of note. The rainfall during the past year has been less than the preceding one, and as sluicing is the chief mode of working on these gold-fields, the races depending on flood-water have been idle, and those supplied from the creeks at work only for short periods; consequently miners have had to suspend work until a more favourable season, and in the meantime turn their attention to agricultural and other matters.

Work on the Nevada Reef, Paddy's River, is still suspended, nor is it likely to be resumed, the lease-holders having removed the machinery, &c., to Victoria.

Messrs. McGill & Co. are still prospecting this locality, and have put in a tunnel 320 feet. There are four men working on this claim.

Messrs. Storey & Co. have effected works on their claim, consisting of a flood-race and dam, at a cost of £150; and immediately below the lease they have cut a flood-race and tail-race to convey the water for sluicing the auriferous land in their claim, at a cost of £1,500. There are six men efficiently employed on this claim.

Messrs. Burke & Co. have also cut an extensive race for the purpose of ground-sluicing their lease.

Pilot Reef Co.'s leases, New Meragle, Nos. 2 and 3 on the line, comprising 13 acres.—Work on these leases has been suspended to enable the holders to place more powerful machinery on the ground, the present being inadequate for the work.

I am happy to say the prospects of the Ournie Reefs are much more favourable. The Isabella has changed hands, and a company is being formed with the view of working the claim and procuring proper appliances for saving pyrites. A great deal of gold has been lost in these claims through want of proper appliances.

For minerals other than gold and tin the returns are *nil*.

TUMUT AND ADELONG DISTRICT—GUNDAROO DIVISION.

(*James Irwin, Mining Registrar.*)

FROM the time the Suburban Gold and Diamond Company, Limited, became owners of the Hidden Treasure Quartz Reef in the division progress in the mine is advancing, and machinery is expected to be erected on the ground within a month, when no doubt other claims may resume work. During the past quarter two other quartz-bearing reefs were discovered, and reported to the Mining Registrar, with a view of protecting their interests and obtaining prospectors' claims.

PEEL AND URALLA DISTRICT.

(*Mr. Warden Irving, P.M., Tamworth.*)

I HAVE the honor to submit my annual report of the state of mining matters in that portion of the Peel River and Uralla Mining Division under my charge during the year 1879.

The only mining prosecuted in my district is for gold. Although there have been no new reefs or alluvial deposits discovered on the Nundle Gold-fields during 1879, matters have been looking a little brighter than they did last year. The number of miners' rights taken out at Nundle stands at 220 for 1879, as against 207, the number for 1878, and the average earnings of each miner, according to the returns of gold (and taking the local value) have increased. The earnings per man in 1878 were about £46, and in 1879 they are £58 per man.

The report Mr. S. Kermode, Mining Registrar at Nundle, has sent in to the Mining Department, is so full and exhaustive, that little room for a report of any length is afforded me, without repeating what that officer has written.

I regret to observe, from Mr. Kermode's returns, that the yield of gold from the cement leads has not borne out my anticipations in reporting about them last year. However the cement has as yet been only treated by being washed. When the crushing appliances erected, and to be erected, come to be made use of the value of this auriferous deposit will doubtless be better ascertained. Meantime the holders of those claims seem to be hopeful and inclined to persevere. The most important quartz mine, the Marquis of Lorne, is not on Crown Lands, but on the estate of the Peel River Land and Mineral Company, on the opposite side of the river from Bowling Alley Point.

In addition to the 220 issued at Nundle, I have to report the issue of 25 miners' rights at Tamworth during 1879. The holders of these 25 rights (or so many of them as have not left the district) are supposed to be mining on the Swamp Oak and Uralla Creeks—some 20 miles from Tamworth. I have not heard any reliable report as to the quantity of gold anyone has procured in this locality.

PEEL AND URALLA DISTRICT.

(Mr. Warden Brougham, P.M., Bingera.)

IN submitting my annual report of the Bingera Division of the Peel and Uralla Mining District, I beg to state that there has been a decided improvement in the yield of gold, but regret to say that the Prince of Wales copper mine has not been worked for about eight months; the ore promised well, and was abundant, but I am under the impression the rate of carriage from the mine to the smelting works left no margin for any profit, except on the picked ore. There has been a reef opened at Bobby Whitlow, which promises well.

Upper Bingera has been turning out some very good gold from 30 to 35 feet sinkings in what is known as the "Wet Lead". There are a number of Chinamen working on the Cooran-goora Creek, and by sluicing have gained a good deal of gold, but it is utterly impossible to get reliable information from them. At Tea-tree Creek, Paling Yards, Black Mountain, and Woods Reef there have been about 49 men working, but as the yield has been small they have only made wages.

Until we have some men of capital and of sufficient energy to go through the basalt I cannot think this gold will be properly developed.

During the year 1879 1,800 ozs. of gold have left this division for Sydney. This, of course, does not include parcels sent by Chinese and others per private hands.

PEEL AND URALLA DISTRICT—INVERELL DIVISION.

(Mr. Warden Fraser, P.M., Inverell.)

DURING the early part of the year 1879 tin-mining operations in my division continued very much the same as in 1878. As the season advanced, however, the supply of water increased, and whilst there was a "flow" the busy hum of work was heard all over the field. Later on in the season a rise in the price of tin caused increased energy on the part of miners, and for the last quarter the "output" from the district has been large.

The vitality of mining operations, it is well known, depends on an abundant and regular supply of water, and until a wisely devised scheme for conducting and conserving water for the working of the high levels, operations on this field must be irregular, and the back gullies will remain very much in their normal condition.

Several projects have been talked of, the most important being the construction of a race from Moredun Creek through a gap in the range some miles above Tingha, thence to the range dividing the waters of Middle and Pond's Creek from those of Cope's Creek, and following that range discharge itself into Auburn Vale Creek or Cope's Creek. This course would provide a supply of water for the working of all the back gullies away from Cope's Creek. This work, when completed would, I am confident, be remunerative, and a large population would thereby obtain profitable employment in tin-mining operations in the levels indicated. This project, however, fell through for want of funds.

The large revenue derived from mining operations here would I think justify the department in affording pecuniary aid to a proper scheme of water supply.

On a small scale races have been constructed leading out of Cope's Creek. The supply, however, is precarious, and could not be made available for the route indicated above.

A considerable number of mineral licenses have been taken out during the year, but holders' expectations have in many instances been blighted by working portions held under lease, but which leaseholders, utterly ignoring the conditions of their lease, have apparently abandoned. After allowing the mineral license-holders to win a few tons of tin they pounce down upon them, produce their title, exact tribute, or threaten proceedings for trespass. The department are, however, fully alive to these dog-in-the-manger proceedings, and defaulting leaseholders are being called upon to show cause why their leases should not be forfeited. The mineral license system is also being tampered with, but a system is being devised which will more effectually identify the license with the land worked in virtue thereof.

On the M'Intyre River the Newstead, Byron, Karaula, New Cornwall, and Elsmore mines have long since discontinued operations.

Prospecting is being carried on in the Red Ranges between here and Tingha, but as yet no new finds have been reported.

Operations on a limited scale have been carried on in the parishes of Mayo and Aston, to the west of Tingha and Stanborough, with satisfactory results. I have a good opinion of the deposits in these parishes, and consider that a small outlay of capital would give satisfactory returns.

The quantity of tin raised for the year is something about 1,050 tons, which averaged during the twelve months some £30 per ton. This, for the estimated population of working miners, would give nearly 30s. per week per man.

I quite endorse Mr. Moore's remarks as to the stability of this large field. With improved machinery and an abundant supply of water the annual output would more than double.

To the Warden,—

Sir,

Union Tin-mining Company, Tingha,
Inverell District.

The year just past (with the exception of the last three months) all but brought the mines of this district to a close, in consequence of a depressed market and the migration of miners to other fields or occupations. However, the Union Tin-mining Company has managed to keep afloat on its own merits, without resorting to tin purchasing, except in a few instances, although tin buying as a rule has been during the last year better for the buyer than the producer.

The late rise in the value of our produce has caused a vigorous revival, especially in the vicinity of Tingha, there being no less than three engines in sight at work, the property of the Union Tin-mining Company, which are now sufficiently advanced in development to guarantee for years an average production of five tons of tin ore per week, each plant as now completed, having cost the company an average of £750, including horses, drays, drainage-machinery, and all requisite labour or material up to 31st December last.

The mines opened in connection with such steam-engines are the United, an amalgamation with the Union and Canadian. Over £2,000 worth of ore was taken from this mine by Chinese, but as the ore fell to £26 per ton locally, and the depth of stripping became so severe, they abandoned the land for their favourite class of mining—surface and ground sluicing—leaving a large excavation open for better times and more advanced systems of mining. Fearing a relapse in price of ore I took advantage of the labour done in preference to facing a very heavy expenditure in opening new ground. There are twenty-two men and six horses at work in this mine, and sundry outsiders cutting and carting firewood.

The Canadian Anchor is situated half a mile lower down the creek, and is similarly provided for and furnished in every respect, the only difference being that the mine is much more extensive, as it includes both sides of Cope's Creek. There is unlimited work for many hundreds of men on this property for many years. The enormous amount of stripping makes this mine risky should the ore again fall to its late price.

Your department seem anxious to foster tin mining development. About two and a quarter millions have been taken from the tin mines in the way of rents, deposits, leases, and licenses, and so far as your district is concerned there has been nothing whatever done to encourage this excellent source of revenue. I think you should advise your department to purchase several steam navvies, and bring into practice their anxious zeal on behalf of the tin-miners and struggling companies in this and other districts. Here is an opportunity to them. The Union Company have auxiliary steam-power and plant for drainage and sluicing purposes, but the enormous stripping of land, from 12 to 13 feet above the wash-dirt, requires a still further improvement than horse-power to move. With a company such as the Union the department could make conditional covenants satisfactory to themselves, the company, and the public. There are twenty-two men and six horses at work on this mine stripping the surface and making preparation for two or three sluice-boxes. Average depth of ground 25 feet, wash-dirt 4 feet, width $\frac{1}{4}$ mile. It is now clearly understood that the Cope's Creek of to-day, with the exception of a few rock-bound passages, is of more recent formation than the old channels underlying the flats, terraces, and basaltic ranges of your district, and that stream-tin deposits will be searched for, found, and worked, as a rule, outside the present main channels of this extensive watershed.

Labour in this district of a suitable character—I mean men who can and will handle the pick and shovel with credit to themselves and employers—are extremely scarce. Wages, £2 2s up to £3 per week.

Ponds District.—Want of water supply and efficient labour has greatly retarded the development of this field. Mr. W. A. Cross, who represents the Union, in addition to his own mines there, asserts that the Middle Creek could be made available for permanent puddling and sluicing purposes there. The Government ought to send up Mr. Wilkinson to report on the question of water supply for the tin mines. His former visit to this field and his report of such has proved very creditable to him, his employers, and the public.

Union Company's Second-class Tin Mines.—Are areas of land held by mineral licenses, mineral conditional purchase, and lease. A large proportion of them are totally worthless in dry weather. The deposits are either surfacing or shallow digging. To stack such creates a risk, as the balance between payable and non-payable wash-dirt is so close, and the ground is so much harder in summer time, the tension of lease or license regulations must be greatly stretched in favor of *bona fide* companies and miners. In other cases, during heavy floods and very wet season, the principal creeks become unmanageable, and in such cases the Union and all progressive parties resort to their shallow workings.

Tin-lode Crushing and Mining.—The Union Tin-mining Company is the only one at work in your district. They have a good five-stamp battery at the junction of Cope's and Herding Yard Creeks just finished and in full work. They acquired possession of the Butchart Tin-mining Company's land, which is now being practically worked. I will gladly furnish you with a monthly return of this mine, as I have no doubt you and your department will take great interest in the development of tin lodes.

Union Yield of Tin, 1879.—Two hundred and fourteen tons, valued in Sydney at £10,000 (ten thousand pounds sterling).

Union Company's Water Supply Race.—The company have a water-race constructed about 5 miles long, and have employed Mr. Surveyor Murray to continue the gradient other 5 miles at a level from Tingha about 80 feet above Cope's Creek, the source being obtained from Darby's branch portion No. 41.

Prospecting.—Is also carried on by this company at Long Gully, Middle Creek, and Cope Hardinge, principally through basalt formation.

Cement.—Found at Karrulla in large quantities led the company to invest in the late Karrulla Company's property. A fine engine, battery, and centrifugal pump are erected on the banks of the M'Intyre to work such, but other machinery is necessary to complete this plant. With such prospects, and if tin keep reasonably high, I think the Union will take the lead in your district this year.

I have, &c.,

D. GROVE, Manager.

Sir,

Tingha, 8th January, 1880.

In accordance with your wish that I should furnish you with a report of the past year's work in connection with the several mines under my management, and also my opinion of the general prospects of the field, I had resolved—for two reasons, (1) pressure of business and (2) want of information in consequence of my absence from home during the last two months of the year—upon deferring the writing of such report until next week, in order that I might be in a position to do justice to the subject, but the receipt of your telegram reminds me of the necessity of acting promptly.

Thus while extremely desirous of furnishing you with full and general information, with the view of assisting you as far as possible in the preparation of your own general report, I am reluctantly compelled to send you only a very brief and imperfect report.

During the year the various mines under my charge produced 100 tons tin ore, besides which I purchased from other parties 110 tons, making a total of 210 tons which passed through my hands.

Of this quantity nearly 90 tons were obtained from "surfacing," over 70 tons from the deep deposits (under the basalt), about 25 tons from the present main creeks, and the remainder from the back gullies and flats.

The wet weather during the winter months gave an abundant supply of water for the back ground, and "ground-slucing" was carried on day and night while the "precious" water lasted, which accounts for the fact that more than half the ore which passed through my hands was obtained from "surfacing" and the back gullies and flats. The dry weather during the last two months of the year almost stopped these workings.

It is scarcely necessary for me to remind you that the above figures apply only to my own production and purchases (the 210 tons), and must not be taken as indicating a fair proportion to the production of the whole field. Had sufficient time been allowed me I should like to have prepared a statement, embracing the whole field, showing the exact quantities obtained from the different deposits, viz:—

1. The present main creeks.
2. The deep deposits in the basaltic hills.
3. The reefs.
4. The surfacing.
5. The back gullies and flats.

which I consider of great importance, but this, under the circumstances, is impossible. I can only give the figures representing my own doings, which may be of service to you when considered in connection with the reports of the other gentlemen holding large interests on these mines, who, doubtless, will supply you with some valuable information.

When all the returns are in it will be found that the yield for last year is far below that of the previous year. You will have observed that during the last few years the yield has been rapidly decreasing, from which it is inferred by many that in a short time the field will be substantially worked out. I am by no means of that opinion. The great falling off in the yield is attributable to the fact that the opening up of the deep deposits has not kept pace with the working out of the shallow deposits. And the secret of the whole thing is the price of tin.

It is not because there is no new field for labour, but it is simply because the continued depressed state of the tin market has acted as an effectual barrier to the prospecting of the deep ground.

It is easy enough to see the end of the present main creeks and surface deposits, which are of comparatively recent formation, but who will venture to estimate the extent of the deposits contained in the old river beds and valleys, now completely covered over by immense masses of basaltic rock.

With an apology for trespassing on Mr. Wilkinson's domain, I have no hesitation in asserting the opinion that the development of these old leads will reveal richer and more extensive deposits than ever yet discovered. But as I expect the process of development to be slow, I do not anticipate any material increase in the yield for the next few years.

At the commencement of last year the local price of ore was £28 per ton, which was reduced to £27 before the end of January, but rose to £29 early in March. Towards the end of March it reached £30, and remained at that until the middle of July, when it fell again to £29. In the middle of August it again rose to £30, reaching £32 in the middle of September, £35 early in October, and £40 before the end of the month. For a few days it was up to £42 and £43, but settled down again to £40, remaining at that until the end of the year.

I am pleased to inform you that the "rise" in tin has given a great impetus to mining on this field, and should the price keep up I feel confident that the year upon which we have just entered will witness some important discoveries.

I cannot conclude this report without expressing the opinion that were more time allowed for the preparation of these annual reports the information supplied by persons similarly situated to myself would be of a fuller and much more valuable character.

Trusting this will reach you in time to be of some service,

I have, &c.,

S. W. MOORE.

PEEL AND URALLA DISTRICT—GLEN INNES DIVISION.

(Mr. Warden Martin, P.M., Glen Innes.)

SINCE the date of my last report a steady and well sustained improvement in mining affairs has been going on in my division, and the depression prevalent at the close of 1878, has been succeeded by a revived spirit of enterprise as cheering in the present as it is hopeful in signs of further advancement for the future.

Much of this revival is to be attributed to the high price of tin in the Home market following a season of such ample rainfall ; but something also is due to the pluck displayed by a few miners in the neighbourhood of Vegetable Creek, who, undeterred by repeated failures, persevered in sinking in deep ground until finally and amply rewarded by the discovery of rich stanniferous deposits in beds of ancient watercourses at a depth of more than 100 feet from the present surface.

Educated in the knowledge which experience alone can give, and having a more intimate acquaintance with the character of the district they work in, our tin-miners are now prosecuting the search for, and working the deposits of, that ore with far greater skill and economy of time and labour than was possible a few years ago.

Gradually the deep leads are drawing them away from the shallow and now comparatively unproductive workings of former years, and if the trial shafts being put down in basaltic hills in various parts of the district should lead, as is probable, to the finding of deposits of tin as rich as those lately opened by Wesley Brothers, a permanency will be given to the industry in this locality which nothing in the nature of its surface deposits could have guaranteed.

At various points, widely separated, on the line of basaltic country running through the district tin has been mined for with success at depths varying from 40 to 130 feet, and in some cases after passing through from 30 to 50 feet of hard rock.

In all these deep leads, at whatever elevation the ore may be found, it is always accompanied by waterworn boulders and pebbles of granite softened by decomposition to the appearance and consistency of chalk ; alike does this rule hold good on the summit of the Sugarloaf (on Strathbogie Run), rising in an isolated cone 700 feet over the surrounding country, as under the 30 feet of basalt at the much lower level of the mine at Kangaroo Flat, but 2 miles distant.

Thirty miles away from these last-mentioned places, in a north-easterly direction, in the face of a high mountain overlooking the deep valley of the Mole, a party of miners have driven a tunnel through basalt and beds of dark brown sand for a distance of 200 feet in search of the ore, which they are confident of finding at the bottom of the ancient water-course, whose slope they are following down.

While excavating in the sand these men are said to have come upon the perfect skeleton of an animal about 18 feet in length belonging to some extinct race of quadrupeds, but with a carelessness much to be regretted the bones were shovelled out into a neighbouring gully, and have probably now passed away beyond recovery.

The reserve for mining purposes in the district of Vegetable Creek, large as it is, does not include the locality to which I am now referring, and it is desirable that its boundaries should be extended in this direction as soon as possible.

For more detailed information relating to the mines at Vegetable Creek I would beg to refer you to the report furnished by Mr. Gower, the Mining Registrar, with his usual ability and accuracy.

By that report it will be seen that 2,915 tons 6 cwt. tin ore was won in 1879, being 979 tons 11 cwt. in excess of that obtained in the previous year. Of that amount 884 tons 8 cwt. 2 qr., at an average price of £40 per ton, was received for reduction at the smelting works, Tent Hill, and 582 tons 1 cwt. 26lbs. refined tin forwarded to England in nearly equal quantities *via* Brisbane and Grafton. At these works twenty-five men were employed all the year round.

Carefully collected information by the police gives the number of miners at work towards the end of the year in the district of Vegetable Creek as 1,022. Of this number 663 were Europeans, and 359 Chinese. Ninety-eight Europeans and 250 Chinese worked on tribute at an average price per ton of £22 15s. ; and 565 Europeans and 109 Chinese worked for wages at average rates of 7s. 6d. per day for Europeans and 25s. per week for Chinese labour.

In the district of Glen Innes Chinese miners varying in number from 300 to 180 have been at work throughout the year on Skeleton Creek and at the head of the Severn, from which localities about 300 tons of ore have been won and sent to Sydney via Grafton.

At Glen Elgin and at Oban a few miners still work for gold in the alluvium, but although specimens of auriferous quartz are frequently brought in, systematic working has been carried on at one place only.

At Kookgrabookgra, near Mount Mitchell East, shafts have been put down by the prospectors to a depth of 36 feet, and the stone on analysis at the Department of Mines gave 2 ozs. gold and 17 dwts. of silver to the ton. Men are still sinking on this reef, but no crushing plant has yet been erected.

At Kingsgate a lode of bismuth is being worked, but I could not obtain information from the owners with reference to the output or prospects of the mine.

The prospectors have sunk a shaft 50 feet in depth on the lode of galena at Wellingrove, and have tunnelled a further distance of 30 feet. At the spot reached the lode had widened to 5 feet, showing a mixture of lead, antimony, and copper, which on assay gave 16 per cent. of lead, and 32 ozs. silver to the ton of lead. Work is not at present being carried on at this mine.

Twenty-eight mineral licenses, forty-nine miners' rights, and three business licenses were issued from the Warden's Office, Glen Innes, during the year.

PEEL AND URALLA DISTRICT—ARMIDALE DIVISION.

(*E. Marriott, Mining Registrar.*)

I HAVE the honor to submit my report upon the gold-fields in the Armidale Division of the Peel and Uralla Mining District for the year 1879.

2. The breaking-up of the late severe drought early in the year had the effect of causing a renewed activity on the different gold-fields in this district, but I regret to say no new gold-fields have been found in the district, and mining operations have been confined principally to the old fields on Boro Creek, Cameron's Creek, Oban, and Puddledock.

3. According to custom, towards the end of last year I sent circulars to most of the miners in this district, requesting to be supplied with particulars as to yield of gold and work done during the year. Several of the principal claimholders favoured me with replies thereto.

4. *Boro Creek.*—From inquiries made from one of the oldest miners in this locality I ascertained that there were only four claims worked during the year, and that as far as he was aware very little gold was obtained, his own share being less than 20 ozs., valued at about £3 16s. per oz., and he estimates that the other miners on the creek obtained very little more, if any.

5. *Cameron's Creek.*—Mr. Alexander Gallagher is the only person having any large interest at stake in this locality. He however has not been able to carry on any work of importance during the year, owing to the difficulty in obtaining miners willing to work on wages on a quartz reef, and to the inadequate supply of water for the requirements of this claim. He still holds a prospecting claim, and a 3-acre lease on this reef. Some years back Mr. Gallagher erected a crushing machine, dams, &c., at a cost of over £1,000, and several crushings have taken place, yielding very fair returns. The machine has however been idle during the past year for the reasons already given, and from the want of capital to erect larger dams to supply the machine with water. Mr. Gallagher has expressed his determination to resume work again as soon as a suitable opportunity occurs. There are a number of Chinese working on different parts of Cameron's Creek Gold-field, but it is almost impossible to obtain any reliable information as to the quantity of gold obtained by them.

6. *Oban.*—Mr. Thomas Clark, with his usual courtesy, has supplied me with some information respecting this old gold-field, more particularly as regards his own claims. He reports, "I cannot form the slightest idea of what the men are getting out of their claims, and there is nobody about Oban but myself who employs any men." He however sends a list of diggers, from which it would appear that there are only about a dozen miners working for gold and tin on Paddy's Gully, and the Backwater, Oban. His own share of gold and tin obtained from his

claim at Paddy's Gully during the year is as follows, viz: Gold, 200 oza., valued at about £3 16s. per oz.; and tin, 3 tons, £30 per ton.

7. *Puddledock*.—Mr. Henry Teege, an old resident, has kindly furnished some particulars as to yield of gold, &c., from this gold-field during the year. He reports, "At present the working miners are ten Europeans and fifteen Chinese." From his own claim at Navigator's Gully he obtained 20 oza. of gold, value £74 10s., and from another claim at Bows Gully he obtained 63 oza. 10 dwts. 12 gra., value £236 11s. 8d. Messrs Taylor and Lynch, Puddledock, report having obtained 100 oza., value £375. Mr. J. W. Gay, Puddledock, 5 oza. 18 dwts. 12 gra., value £22 3s. 4d.; and two parties of Chinese in the same locality obtained 10 oza. 4 dwts. 12 gra., and 40 oza. respectively.

8. From the above it will be observed that nearly 240 oza. of gold have been obtained from different claims on Puddledock, which, on a reference to former reports, will be found to be a large increase on that of previous years.

9. The number of miner's rights issued by me during the year was—miner's rights, eighty-four; mineral and business licenses, none.

10. From inquiries made, I have ascertained the quantity of gold purchased or received at the different Banks and stores in Armidale during the year amounts to about *522 oza. 16 dwts 6 gra., value £1,960 10s. 11d., or an average value of £3 15s. per oz. in Armidale.

PEEL AND URALLA DISTRICT—NUNDLE DIVISION.

(*Samuel Kermode, Mining Registrar*)

I HAVE the honor to forward herewith my annual report for the year ending 31st of December, 1879. I commence with the quartz reefs which have been worked during the year, and one or two others which have been idle.

1. Mr. J. P. Robitson and party's quartz claim on Foley's Reef, at Bowling Alley Point. A quantity of stone has been raised, but not any crushed during the year. There is a level in this claim 700 feet, with a monkey shaft down 50 feet below the tunnel level; deepest shaft about 230 feet.

2. Mr. J. P. Robitson and H. Wilkins quartz claim on the old Opossum Reef crushed 300 tons of quartz, averaged 15 dwts. to the ton, making a total of 225 ounces. Deepest shaft 120 feet; deepest level 230 feet; quartz being raised shows gold as well as last crushing.

3. Messrs. J. P. Robitson and party's quartz claim on the old Golden Hole Reef has been at work for the last seven months pumping water with a steam-engine six horse-power and Tangy Brothers pump most of the time. They have raised 4 tons of quartz that averaged 5 dwts. to the ton after 2 oza. 10 dwts. had been picked out.

4. Messrs. T. Mason and party's quartz claim on Golden Hole Reef, west of old claim, crushed 5 tons of quartz, averaged 10 dwts. to the ton after 20 oza. of loose gold had been hand-washed out of it. Deepest shaft 60 feet.

5. Messrs. J. P. Robitson, J. Lindsay, and T. Stratton's Marquis of Lorne quartz claim on the Peel River Company's Estate crushed 150 tons of quartz, averaged 2 oza. 15 dwts. to the ton, making a total of 412 oza. 12 dwts. for the year. There are 17 men employed on this claim. There is a level along this reef for some 600 feet, being about 500 feet from the surface at deepest point. The owners are now putting in a new level to cut the reef at about 650 feet deep. This level is now in 375 feet; they expect to drive some 200 feet more before meeting the reef.

6. A claim on the same line of reef was worked for a few months; the owners crushed 15 tons quartz which yielded 21 ounces of gold. This reef did not pay, as the reef is very small and hard to work.

7. Messrs. J. Patey, Thomas Bakewell, and R. Northmore's quartz claim on the Brown Snake Reef raised 60 tons of quartz which yielded 2 ounces to the ton after 80 ounces had been hand-washed out of it. There are two shafts on this claim 150 feet each, meeting close together at the bottom, and a drive 60 feet each way at the bottom of the shafts. The quartz still looks payable.

* P.S.—This does not include 200 oza. obtained by Mr. Clark at Oban, which I understand was forwarded direct to Sydney by that gentleman.

8. Messrs. T. Stephens and Chas. Hoare's quartz claim on Brown Snake Reef, north of Patey and party, crushed 24 tons of quartz, averaged 1 ounce to the ton after 22 ounces of loose gold had been hand-washed out of it. They have one shaft on this claim 100 feet deep.

9. A few claims south of Patey and party's claim on Brown Snake Reef have been prospected to a depth of 60 feet without success.

10. Messrs. J. Clark and G. Cairns's claim on Black Snake Quartz Reef did not crush any stone, but obtained 130 ounces of loose gold. There are two levels in this claim about 100 feet each. As much as 20 ounces to one dish of the reef has been taken out.

11. Messrs. C. B. Anderson and J. Cairns's quartz claim on the Black Snake Reef, south of Clark and party, raised 35 tons of quartz, which averaged 2 ounces of gold to the ton. There are three shafts in this claim, one 40, one 50, and the other 80 feet deep, and a level in meeting the reef at 40 feet deep from the surface.

12. The old Moonlight Reef has been idle for the last two years.

13. Messrs. R. Morris, E. Skippington, and party's quartz claim on the Black Snake line of reef, about a quarter of a mile south of Anderson and party's claim on same reef, has been worked nearly all the year without success, until a few weeks back, when the present owners came across a patch of 75 ounces about 20 feet from the surface. The deepest shaft in this claim is 45 feet; also a level is in about 60 feet, meeting the reef about 35 feet deep.

14. Christmas Reef, just found close to the Black Snake line of reef, shows gold well all through the stone. This vein is running east and west dipping to the north, while the Black Snake and Brown Snake Reefs are bearing north and south dipping to the east.

15. Messrs. R. Allbury and party's quartz claim on a new line of reef, north-east of Brown Snake Reef and about a quarter of a mile away, crushed 12 tons of quartz, which averaged 3 dwts. to the ton, and 11 tons that averaged 2 ounces to the ton. They seem to have two veins in this claim, one of them not being nearly so good as the other. They have a tunnel in about 80 feet; deepest part about 30 feet below the surface.

16. Mr. C. B. Anderson's quartz claim on the Lady Mary Reefs crushed 7 tons of quartz, averaged 12 dwts. to the ton; did not pay.

17. Messrs. J. Brayshaw and R. Northmore's quartz claim on new reef at Hanging Rock crushed 21 tons of quartz, averaged 1 ounce to the ton. This is an east and west vein, dipping to the south; deepest shaft 50 feet.

18. Mr. G. Bond's quartz claim on the Quackannacca Reef, near Folley's Folly, crushed 60 tons of quartz, averaged one ounce to the ton; deepest shaft 100 feet.

19. The Wheal Prosper Gold-mining Company's claims at Folley's Folly have not crushed any during the year. They have put down a shaft in the old level 100 feet, and driven a level from the bottom of this shaft about 80 feet. The deepest shaft on this mine is about 520 feet.

20. Mr. J. Stanning's Gap Claim Reef crushed 12 tons of quartz, averaging 13 dwts. 18 grs. to the ton, making a total of 8 ozs. 5 dwts. There is a level in this claim 650 feet.

21. Messrs. J. Powell, senior, J. Powell, junior, J. Wright, and Thomas Taylor's quartz claim on the top of Hanging Rock has not crushed any: they have a shaft down 60 feet. This reef is very large and hard, not showing much gold as yet.

22. There are a great number of other reefs which have been prospected and a little gold found near the surface, still not showing enough to entice miners to sink without having some capital to support them.

Alluvial Claims.

1. *Bowling Alley Point.*—Mr. Kemp and party's extended alluvial claim in old ground not paying very well; average wages about £1 10s. per man per week.

There are a few other European miners working on the Peel River Company's Estate in old ground. There are a few parties of Chinese miners fossicking the bed of the river, and a few on the old ground on the Peel River Company's Estate, and a couple of parties fossicking the river bed between Nundle and Bowling Alley Point.

2. *Nundle.*—Mr. Ah Sam Lowing's gold-mining lease (alluvial), at the foot of Oakenville Creek.—There are twelve men working constantly in this claim; they work it by

open cuttings and long tail-races to carry away the tail-water and tailings. They are making very fair wages.

3. There are a few Europeans and Chinese fossicking the Happy Valley, Oakenville and Swamp Creeks. Mr. Hitchens is now opening a sluice claim in the deep ground in Happy Valley; he has a tail-race cut for about 200 yards; he expects to have to cut the race 50 yards further before reaching the deep ground, which is about 25 feet deep and full of water.

Alluvial Claims, Mount Pleasant.—Messrs. James Henderson, J. W. Rowe, and party's gold-mining leases, Alluvial Cement Lead, raised some 300 tons or loads of cement wash, and washed it through a sluice-race; obtained 78 ozs. of gold, being something over 5 dwts. 4 grs. to the ton or load. They have two tunnels into these claims, one 450 feet, the other 670 feet; one shaft down 130 feet. The wash is from 5 to 6 feet deep, and about from 30 to 40 feet wide. The proprietors have just erected a water-wheel (40 feet) with four stamp heads for the purpose of crushing the cement; they have the fixtures for another four stamps which they will erect should the four now erected act satisfactorily.

5. Mr. J. Wilson and party's alluvial cement claim, joining the south end of Henderson and party's leases, have a tunnel in 450 feet, being about 120 feet from the surface. This claim has been paying wages all the year by washing the cement through a sluice-race. The owners intend to try crushing the cement as soon as the machine is ready.

6. The next claim on same lead further south is Mr. C. Johnston's; he has a tunnel in some 300 feet, but has not met the cement lead as yet; the depth will be about 130 feet from surface.

7. The next claim further south is Mr. John Rackham's; he has a tunnel in some 400 feet; getting small wages, but nothing good as yet; he expects to get on the proper lead in a few weeks.

8. All other claims on the alluvial cement lead are idle, and have been the whole year round.

9. The alluvial cement claim at the head of Nundle Creek, supposed to be a continuation of the Danger's Gully cement lead, has been working the whole year; average wages about £2 per week per man. By washing through a sluice-race they cannot thoroughly wash this cement, it being too hard; it requires a crushing machine, then I believe that it would pay £3 per week per man, if not more. They have a tunnel in some 100 feet, being about 40 feet deep. They have several shafts down on the lead about 40 feet deep. This lead as yet is very thin, some places not more than 6 inches, and others 2 feet, and very hard to work on account of the very large boulders that are in the face of the work.

10. The alluvial cement claims, Danger's Gully, Hanging Rock.—Messrs. Robinson, R. Walker, W. Thomas, and party are still working; they have a new tunnel into the hill about 400 feet; they are on a little cement, but it does not show much gold; they have an air-shaft down 73 feet; they expect to have to drive 100 feet further before meeting with the proper cement lead. My opinion is that they will have to drive about 200 feet further, and then they will meet with the lead, or old river bed as it is supposed to be.

11. Mr. Thompson and party's cement claim, joining Robinson and party on the north side, have a tunnel in some 400 feet, and a shaft down 100 feet. They have not met with any cement as yet; they have been driving through a clinker rock for the last 200 feet; it is very hard in places.

Machinery on the Gold-fields.

1. Mr. J. P. Robitson.—Fifteen horse-power steam-engine, with a battery of ten stamps; value, £1,500; crushed during the year 597 tons of quartz, which yielded 877 ozs. 4 dwts. of gold.

2. Mr. J. P. Robitson.—Steam-engine and pump, 6 horse-power, now in use on the Golden Hole claim, value £200, and a small portable engine and boiler on the same claim not in use, value £150.

3. The old water-wheel (four stamps) and battery, at Bowling Alley Point, has not been used for the last two years; value about £100.

4. The water-wheel and four stamp heads on the old Moonlight Reef has been idle for the last two years; value, £150.

5. Mr. G. Bond's water-wheel, four stamp heads, value £600; crushed 107 tons of quartz, which gave a return of 107 oza. 16 dwts. of gold.

6. The Wheal Prosper Gold-mining Company's water-wheel, with four stamp heads, crushed 12 tons of quartz during the year, which gave a return of 8 oza. and 5 dwts. of gold. The value of this machine is £600. This mine has a self-winding machine—£100. Total value of machinery on claim, £700.

7. Mr. James Henderson and party have just erected a water-wheel (40 feet) with four stamp heads on their cement claims, on Mount Pleasant; value of plant, £700.

8. The estimated number of European miners employed in quartz-mining during the year, 100; and in alluvial claims, 40; number of Chinese miners, 80. Total number of miners' rights issued for the year 1879, 212; out of these there are about thirty-two held by persons who do not mine. There are about forty European and Chinese miners working on the Peel River Company's Estate who do not hold Government rights. The total number of mines, 220 for the year.

9. As near as I can ascertain, the quantity of gold obtained from quartz reefs on this field during the year is as follows:—

From 716 tons of quartz crushed	...	993 oza.	5 dwts.
From quartz in patches	... ..	349 "	10 "
From alluvial claims	... ..	2,134 "	0 "
" " (nugget)	... ..	23 "	0 "
" " (nugget)	... ..	43 "	0 "
Total.....		3,542	15

Value in this division, £3 13s. per oz.; total value, £12,931 9d.

10. Total value of machinery in this division during the year, £4,100.

I believe that I will have something better to report for 1880, as the miners are now paying great attention to the quartz reefs and the cement in this neighbourhood.

PEEL AND URALLA DISTRICT—BARRABA DIVISION.

(*John Flanagan, Mining Registrar.*)

IN submitting this my annual report upon mining in this division, I regret to have to state that the prospects during the year past have not been more encouraging than in previous years. About fifty miners have been engaged in alluvial, and, from their own statement, barely making wages. Several other miners have visited the gold-field, remaining but a short time. Several small quantities of gold passed through private hands, of which I am unable to obtain information.

PEEL AND URALLA DISTRICT—BINGERA DIVISION.

(*M. Doyle, Mining Registrar.*)

THE progress of alluvial gold-mining in this division has been satisfactory during the past year. More gold has been won than for the three or four preceding years, and there is every reason to believe that an improvement will be made during the present year, as a considerable number of men are now coming back from shearing and harvesting with a view of making this place their head-quarters during the winter months. The Prince of Wales Copper-mining Co. at Bobby Whitlow have ceased to work the mine now for a considerable time, and, as far as I can ascertain, have no immediate intention of commencing again.

PEEL AND URALLA DISTRICT—SCONE DIVISION.

(*J. T. Wilshire, Mining Registrar.*)

I HAVE the honor to report, with reference to the Upper Hunter or Denison Gold-fields, situate in the Police District of Scone, that during the past year but very little quartz-mining has been carried on, chiefly owing to the collapse of the "Fullers' Reef Gold-mining Co.," an English company, whose plant and property have been sold under a Sheriff's sale, and now purchased by a small proprietary of the old mining residents of the locality, who purpose working it on a much smaller scale.

A few ordinary claims are being worked on Dry Creek, from which fair results have been obtained, but the actual quantities I have not been able to ascertain.

A small number of men are working alluvial, but the yield of gold has not been large. The total quantity from both sources has not been greater than about 100 oza., as far as I can learn.

Thirty-seven miners' rights have been issued during the year. There does not appear to be much prospect of an influx of miners to this field at present.

PEEL AND URALLA DISTRICT—TINGHA DIVISION.

(*Thomas Jones, Mining Registrar.*)

In submitting this my fourth annual report, I do myself the honor of recording the progress made in the development of the mines in this district during the past year, and, with a view to do justice to so important a matter, I have lately visited different portions of this vast division, and satisfied myself by personal inspection that many of the lessees have not resumed mining operations on their deserted mineral leaseholds. Notwithstanding that every inducement is at present offered by the advantageous price of tin to prosecute the tin-mining industry with vigour, it is much to be regretted that four-fifths of the land held under mineral lease is lying idle in the hands of speculative lessees awaiting the arrival of tributors, who are asked to work their holdings at the usurious tribute price of £28 to £30 per ton, when the ore is now eagerly purchased at £45 per ton in the local market.

At the present moment it is congratulatory to find that a reaction is manifesting itself in the tin-mining industry of this field, and that the late inspiring intelligence that Australian tin had reached the very satisfactory price of £102 10s. in the London market has led to a reaction throughout the field. Every miner is buoyant in the expectation that present rates will be upheld, and I opine that the revived impetus will lead to a further development of known deposits being extensively and lucratively worked that have hitherto lain dormant through the late depression in the price of tin ore.

Notwithstanding that the total return of tin ore won for the past year is some 450 tons less than the output for the corresponding period ending December 31st, 1878, it indubitably arises from producers having been unable to raise ore at a profit. Hence an unauthorized suspension of mining operations ensued by the lessees who employed tribute labour, which rendered their leases liable to be cancelled.

I quote the total amount of tin reproduced for the year ending December 31st, 1879, at 1,035 tons, but it is difficult to fix an exact estimate, as some producers have sent a few tons of ore away and left the district.

The number of acres applied for under mineral lease amounts to 790, and 171 mineral licenses have been issued. The local value of tin ore has fluctuated from £27 per ton to £40. It is now standing firm at £45.

The weather during the past year has been exceptionally favourable for mining pursuits in general, and superabundant rains have specially tended to facilitate sluicing and surface operations, which has considerably increased the total output of the field. There are large areas of land throughout the division that would afford profitable employment for surfacing to numbers; but owing to the absence of a continuous stream or any provision made for sluicing, by the construction of dams and water-races, much valuable land lies idle.

It is to be regretted that, notwithstanding many mineral leases have been peremptorily cancelled through the departmental Gazette notice for non-observance of working conditions, the Mining Act remains so abortive, that mineral lessees, by skilful manœuvring can re-select the cancelled portions *with an advantage* of not being required to work the land for a considerable time, thus reholding it for speculative purposes only. Such lessees are complete obstructionists to the legitimate pioneers of the tin-mining industry, but too frequently endeavour to represent themselves as enterprising capitalists.

Since my last annual report the tribute system has been more widely extended, and with the exception of the last month of the year, owing to the reaction of the tin market, tribute labour has been general with the lessees throughout the field. This is a decidedly retrograde

movement, and not calculated to create permanence in the field. As much of the shallow deposits can be here worked with the most primitive appliances (green-hide buckets and wooden windlass), tributors have no occasion to be dependent upon lessees for mining tools, but might with prudent tact and ordinary regard for their own welfare work their *own* land, *there being thousands of acres of payable tin land* throughout this division, which, when the price of tin ore does not fall below £40 per ton, can be worked under mineral license, at an annual fee of £1. Such license entitles the holder to an area of four acres, for *working* stream tin, or forty acres whilst *searching* for the same.

I will proceed to make brief allusion to the most prominent claims now working, but for details, position, and other minutiae, I will trouble you to refer to my previous reports "*in extenso*."—

Messrs. Martin and Irvin's ground is nearly exhausted.

Inverell Company's claims are still lying idle.

Woods and Buckwood's properties, now exempt from the working conditions for a period through being converted into a mineral conditional purchase, idle.

The Union Company's claims in many places on the Ponds Creek and elsewhere have been converted into mineral conditional purchases.

The Butchart Reef has fallen into the hands of the Union Company, and Mr. Grove, the manager and part-proprietor, is making untiring efforts to open out this reef, which remained dormant for six years, until it was allowed by the late lessees, Ross and Company, to become abandoned and cancelled through non-payment of rent. The advantage of the Union Company having an engine and battery in the vicinity, which has long remained idle, may be the means of proving this reef, which I can but hope will stimulate the working of other reefs throughout this field, of which there are legion, but owing to the want of enterprise and capital are not opened out at present.

Being aware that the manager of the Union Company's claims has furnished Mr. Warden Fraser with a detailed report of all workings, including particulars relating to machinery, &c., I deem it inexpedient to make further note upon this company's mines, which might prove but recapitulating matter. Mr. Grove quotes the number of men employed as 143. These men, I presume, not being wages men, and the tribute agreements, if any, not being filed, I am of opinion, could not be recognised as "*bona fide*" compliance with the working regulations relating to mineral leases. The essentiality of filing tribute agreements has been always impressed by me upon the lessees, but to no purpose. In my late tour throughout this portion of my division I failed to observe the number of men stated working on this company's claims, and it would have been far more satisfactory if I could have obtained the names or numbers of each claim and the number of men working respectively thereon. I would here mention that I feel I am called upon to supply *accurate* and *reliable* information.

During the past year several applications for water-races have been entertained, and which have been registered; they will greatly facilitate the working of mineral lands hitherto thought valueless, and, coupled with the increased price of tin ore, a much heavier output from this tin-field may be anticipated for the year 1880.

Specimens of fresh mineral discoveries have been recently received by me, and were forwarded to the Department of Mines for analysis. They were discovered in the parish of Mayo, and contained as follows:—

					ozs.	dwts.	grs.	
Gold	...	...	...	...	0	0	5	per ton.
Silver	...	...	...	...	2	18	0	"
Copper	...	...	...	...	5	96		per cent.

During the latter part of the past year an annual pressure of work has occurred, arising from multiplicity of applications, and also from a protracted law suit that has been pending since November 3rd, and still stands adjourned, thus necessitating my almost constant attendance at the Warden's office. This report will be therefore somewhat curtailed in consequence, as I was unable to visit the more remote portions of this vast division.

General Remarks.—I deem it incumbent to observe that in my previous reports I formed a somewhat premature opinion of what I then deemed enterprising capitalists, whom I believed

to be worthy of every consideration, in assisting to develop the vast resources of this stanniferous field, however I find, to my chagrin, now, that a very large portion of those Blocks that were reselected have not been even prospected by such capitalists, and thus not being worked or opened to the *bona fide* miner on reasonable terms. I now form different conclusions and find that the reselection of the cream of the forfeited mineral lease by capitalists is causing serious obstruction to the development of the division. There is a very large area, thousands of acres, of stanniferous ground in this district as yet undeveloped, and will remain so probably for an indefinite time unless capital can be obtained to assist, as the alluvial deposits are at such depths that machinery is required to keep the workings dry and working men cannot unaided combat against such difficulty. It is an unanswerable fact that Tin mining has been and will continue to be a great source of wealth and means of employment to a considerable number of the working population, *the bone and sinew of the New England's tin fields*, but I fear the inducement hitherto and at the present time held out to those engaged in this particular branch of mining industry has not been sufficient for men to enter into it with the energy it deserves.

On a recent tour through the county of Gough, in the parishes of both Herbert and Clive, I observed some valuable discoveries of alluvial stream tin, which are worthy of special mention and will be the cause of inspiring many others to prospect this promising locality. At the earliest opportunity I will furnish the Department of Mines with a sample of the very rich wash dirt, as taken from the face of the workings, which is easily obtained at a depth of about seven feet from the surface.

I estimate the population for the year ending December 31st, 1879, as follows : European miners under 200 ; Chinese, about 400 or more. Since that date the population has been daily increasing, and people of all trades and callings are wending their way to the Warden's office for mineral licenses prior to prospecting, hence I openly express my undisguised hope that such prospecting may be encouraged by the cancellation of unworked leaseholds that at present obstruct the development of known deposits, and which would afford profitable labour to hundreds of miners.

PEEL AND URALLA DISTRICT—URALLA DIVISION.

(*W. Dawson, Mining Registrar.*)

I HAVE the honor to forward herewith schedules of statistics in connection with this gold-field to finish my report for 1879.

The number of miners' rights issued for the year was : To Europeans 130, to Chinese 48, a total of 178. But I am under the impression that a great many unauthorized miners, especially Chinese, were working in different parts of this scattered and widely extended gold-field.

The heavy rains which from time to time have fallen during the year have enabled many of the various sluicing claim-owners to realize, and indeed the principal part of the gold which has been won on this field has been from these sources, no other works of any magnitude at present being on wash-dirt.

The quantity of gold obtained, so far as can be reliably ascertained, was 2,030 ozs., of a value about of £7,700; but as it is known to me that some large parcels are still in miners' hands, and that some have been conveyed hence by private means, the above stated quantity is doubtless considerably below the full proceeds of this gold-field.

The difficulty of obtaining accurate information in this respect is increased by the withdrawal of the Government escort.

Messrs. Young and Cleghorn's sluicing claim at Mount Walsh has paid good returns ; also Anderson's Union Tunnel claim. This latter is on the extreme westerly boundary of the Long Tunnel Gold-mining Company's land. Various other sluicing claims upon the Rocky River have also largely contributed to the general wealth, proving that with water supply the riches of the old Rocky are almost inexhaustible.

One sluicing claim at the Congai, about $1\frac{1}{2}$ mile from the main northern railway extension, worked by a party of Chinese and Europeans, has paid fairly.

The Long Tunnel Company has during the year been blasting in hard granite ; they are now through, and are preparing to rise into the wash-dirt. This company has a very valuable mine, and under skilful management must pay handsome returns, even though the cost of adit has been so much more than at first anticipated. The tunnel is now in about 1,400 feet.

The Bullion Company has during the year had many difficulties to contend against, and after sinking five shafts, it became with them a question whether or not they should give up their enterprise or further test the ground. Eventually, for this purpose, they abandoned their original holding and commenced a sixth shaft, which they are now sinking ; they have reached a depth of about 100 feet, and are in hard bluestone.

There are of course the usual quantity of fossickers, &c., always to be found upon old gold-fields. Upon this we are looking forward to the time when the opening of extensive workings shall bring amongst us a better class of miners and a livelier population.

Rocky River, 29th December, 1879.

Sir,—I have the honor to report for your information, that this company have continued prospecting operations during the present year, and hope to be able to continue them until the rich gold lead of Sydney Flat shall be proved to extend through the deep wet ground to the east of the ground worked and abandoned about twenty years ago, the miners of that period being unable to proceed further on account of excess of water together with a heavy deposit of loose sand, which came away with the water, when the ordinary method of bailing or pumping was adopted. The bed rock (granite) rises to or near the surface on each side of the supposed deep lead, at a distance of about $\frac{3}{4}$ of a mile apart. When the Bullion company began operations advantage was taken of the soft granite which forms the rim of the deep basin or hollow. The first shaft reached the granite at a depth of sixty feet dry, it was then carried down a further depth of 41 feet in the soft granite, the close greasy texture of which renders it almost impervious to water, after a sufficient well hole had been provided in the bottom of the shaft and the pump duly fixed for work, a tunnel was cut in the direction of the dip, and test holes bored upwards with an auger, when the water and drift were tapped overhead, a tube 3 inches in diameter perforated with $\frac{1}{2}$ inch holes about $1\frac{1}{2}$ inch apart, was driven into the hole made by the auger, and stopped at the bottom with a wooden plug, the tunnel was driven further until five similar tubes were fixed, the plugs were then withdrawn and the water allowed to flow in such quantities as the pump could manage, or altogether stopped at pleasure. This experiment succeeded beyond the most sanguine expectations of the company, as the water came away perfectly clear, soon after the tubes were opened, a few pebbles settled around each hole at the back of the tubes and effectually prevented the fine loose sand from coming through, a shaft was then sunk over the tunnel and the ground being thoroughly drained, could be worked without trouble. It was however found that the drift at this point was not sufficiently rich to pay, and did not appear to belong to the principal lead, another tunnel was driven from the level of 97 feet at another angle and at a distance of 250 feet from the shaft, the basalt came down the face of the tunnel at an angle of about 45 degrees, with however no drift between the basalt and bed rock, it was conclusive that deeper ground lay in that direction, it was therefore decided to sink a shaft in the direction of the dip, about 300 yards south. This shaft was 9 feet + 3 feet, and lined with 2 inch plank throughout. Divided into three compartments for pumping and working, the pumps and working gear were worked by a 12-horse-power engine. The shaft was bottomed at a depth of 145 feet, being through basalt rock the whole way. The water level was reached at 57 feet, and during the sinking of the remaining 88 feet, which was carried on night and day, the pumps discharged an average of 3000 gallons of water per hour ; at odd times when the water was too strong to allow men to work below they were employed sinking another shaft 110 yards distant as an extra working shaft ; the main shaft however proved unsuccessful as the basalt lay on the bed rock without, and intervening drift or wash. Some very singular and unusual features were met with during the progress of the main shaft, at a depth of about 100 feet, numbers of granite boulders together with leaves and limbs of trees were found imbedded in the basalt or trap rock.

The company being satisfied that the lead existed somewhere in their ground put another shaft down about 400 yards further to the south-east ; in this instance a body of over 80 feet of drift similar to that on the best parts of the gold fields was found, it was covered by 42 feet of basalt. The water level was reached at 84 feet, at which point the drift was very fine and loose ; a shaft could not be sunk in this sand and water except at very great expense, but an effort was made to reach the bed rock by means of boring rods and tubes, these were carried down to 40 feet below water level without finding the bed rock and abandoned, when another shaft was begun about 150 yards further to the south east, the object in view being to reach the bed rock at a higher level, and to repeat the same operations on the south side of the valley which were practised in the first instance, on the north side the shaft is down this day 91 feet and still in basalt.

I have, &c.,
RICHARD ROBERTS, Manager.

Long Tunnel Gold-mining Co. (Limited).

Uralla, 8th January, 1880.

I HAVE the honor to place before you a report of the operations of the company during the past year.

Our last report made through Mr. Warden Buchanan stated that we were working through a belt of very hard granite which we hoped would not extend a much greater distance. These hopes however were doomed to be disappointed, and, contrary to all expectation, rock of a precisely similar character had to be contended with until about two months since when a favorable change in the country was struck, the Granite assumed a partially decomposed form, and more speedy progress was made.

During the past year work has continuously been carried on in three working watches or shifts, and some idea of the solidity and density of the rock may be formed from the fact that about 300 feet only have been tunnelled out in twelve months at an expense for labour, material, and plant of about £120 per month. The length of the tunnel at present date is from entrance of adit to face of work about 1,400 feet.

In consequence of the unexpected extent of hard rock, the directors in May last decided to sink a trial shaft upon the line of the drive some considerable distance ahead of the then present face. Through the kindness of Mr. Joseph Roberts this was allowed to be done in his freehold, and the result was that deep ground was proved to exist in that direction. This shaft was sunk a depth of 85 feet—the water level having passed through different strata of pipeclays and drifts—the level then attained being in the ordinary drift of the Sydney Flat Lead. Having thus ascertained that the deep ground lay in the line of the tunnel, driving was at once resumed, and the present face of drive is within a few feet of this shaft. At the time of sinking the company did not deem it advisable to bottom the shaft, but the probabilities are that the bed rock will be reached at a depth from the surface of 95 feet or thereabouts.

Within a short distance from this shaft a rise has been commenced and in a week or two we expect to be into wash. The point at which this rise has been commenced is not in the land held from the Crown by the company, which is about 400 feet distant, but in freehold land under which the company has secured the right to mine. The land where the present rise will be made has not to any extent been tested for gold, and it would be a matter of no great surprise if rich virgin ground should be opened out.

Mr. Andrew Martin, formerly mining manager, was compelled by ill health to resign his position, which is now and for some time past has been occupied by Mr. Philip Waterson, a well known mining manager, and our operations are most ably conducted by him.

Very lately an extensive plant comprising iron door and box trucks, kick-ups, &c., have been imported from Ballarat to the mine. The permanent tramway, shod with half round iron, solidly laid in sleepers, extends from the wash dirt flat to the face of the drive. The ventilation is simply perfect, air being conducted by means of 9-inch galvanized iron pipes and the timbering and other constructions are all of the most permanent character, and upon opening out the mine everything is ready for carrying on the workings upon a most extensive scale.

Water supply is of course a most momentous question in the prosperity of the company. Our water reservoir, which is capable to a large extent of increased storage, is at present full, and although no water has yet been tapped from the alluvial, yet the constant drainage and leakage through the granite pierced in the workings, amounts to about one-third of a box sluice head, giving indications of a water supply of a most permanent character.

A few months should now suffice to prove to some extent the value of the company's property, and in our next report we hope we may faithfully state that the mine is paying good and remunerative dividends.

I have, &c.,

HENRY ROMAN, Local Director.

PEEL AND URALLA DISTRICT—GLEN INNES DIVISION.

(*H. Hely Hutchinson, Mining Registrar.*)

I HAVE the honor to forward my report for the year 1879. I have not been able to visit as yet personally the various mines throughout my district, but hope to do so before the expiration of the present year, and report thereon.

On the upper waters of the Severn several prospecting parties, chiefly Ohinamen, are employed in mining for tin over an area of several miles, and as far as I can ascertain but with little result.

At Skeleton Creek there are from 50 to 100 Chinamen engaged getting tin, and during the past year about 300 tons of tin have been raised.

There are also about the same number of Chinamen engaged at the Bald Nob, but I am unable to state with what result, owing to my not being able to get any report from the miners engaged at work there; this is also applicable to Skeleton Creek. Owing to the recent rise in tin several hitherto deserted parts of Skeleton Creek are being again worked, chiefly by Chinamen, and leases are being applied for on land cancelled in the same quarter.

During the month of October a gold-bearing reef was discovered at Hell Hole Gully, since called Kookgrabooogra, situated about 5 miles in an easterly direction from Lower Mount Mitchell Station, distant about 40 miles in a south-easterly direction from Glen Innes. A parcel of stone from this reef, called the Pilgrim's Progress, was assayed at the Mines Department and gave a return of 2 ozs. 17½ dwts. to the ton. A shaft has been sunk to a depth of 20 feet in the prospectors' claim, but operations are at present suspended waiting the erection of machinery. A shaft 60 feet in depth has been sunk on an adjoining reef, the British Lion, and though the assay made on the stone sent to the Mines Department and taken at a depth of 20 feet was unfavourable, yet the company have decided to try a fresh assay, very favourable stone having been struck at the 50-foot level, which continues to look well at the present depth sunk, viz., 60 feet. This company have likewise stopped working, waiting the result of the second assay.

Twenty-three applications for leases have been made on these two reefs.

At Oban and Glen Elgin a few miners are engaged in the alluvial workings with various success, but I am not at present in a position to report fully on the number of men engaged and their earnings.

The Starlight Reef at Oakwood is not being worked at present, partly owing to the difficulty of getting machinery on to the ground and the want of capital to develop the mine. Within the last two months several leases have been applied for on this reef, which shows very good gold, and I expect ere long a company will be floated to work the mine.

The bismuth mines on the Kingsgate Run are being developed, and I hear that 8 cwt. of the ore has already been sent to Sydney. There appears to be any quantity of the metal in the vicinity, and the percentage is, I am told, high, though owing to the owners being reluctant to give information I have been unable to ascertain the value of the metal and the price brought in the market. This district is undoubtedly very rich in every description of minerals, but the want of capital prevents its being prospected to any extent, and capitalists are very cautious after the unprofitable tin mania of 1872.

I have issued during the year fifty miners' rights, twenty-eight mineral licenses, and three business licenses.

PEEL AND URALLA DISTRICT—WALCHA DIVISION.

(M. Love, Mining Registrar.)

I HAVE the honor to submit report upon the gold-fields in the Walcha Division of the Peel and Uralla Mining District for year 1879.

Glen Morrison.—The two claims referred to in my report for 1878 still continue to be worked, and no further registrations have been recorded on this field. Messrs. Stratton and Co.'s Old Star Reef have about 10 tons of apparently good stone raised (6 tons crushed since the report was written yielded 51 ozs. 15 dwts.), and Maloney and party about 100 tons (50 tons crushed since the report was written yielded 25 ozs. 13 dwts.) which will be crushed during this present month.

Nowendoc.—I have not visited this portion of the district, but intend doing so at an early period. The following extracts from a letter of a practical miner in the locality will doubtless be of interest, as they afford information of the working on the diggings generally:—
“The population on the Nowendoc diggings never exceeds thirty since the starting of the Barrington, and of this number there are about twenty working in the Back Gully, where a tin dish and occasionally a cradle are used, the gold lying in crevices of rocks. When miners find a patch of gold they do not like making it known, as they deem it unsafe in this unprotected mountainous country. There are six claims at work, earning respectively about $\frac{1}{4}$ oz. per week, one of the claims having a race (valued at £100) 1 mile in length. No payable quartz reef has as yet been found. They have not sunk sufficiently deep to properly test them. Copper has been found here; on one occasion I picked up stone containing copper. I think the average weight of gold obtained here would be from 12 to 15 ozs. per week. A lot of prospecting is done, and doubtless something will be struck soon. The absence of a store is much felt by the miners, as the necessaries of life are obtained under great difficulties.”

During the latter part of last year reports of a rush to Nowendoc gold-field were circulated throughout New England, and were announced in the columns of Sydney daily newspapers, but (as already reported to your department) such statements were not in accordance with truth.

Nowendoc gold-field, comprising an area of 1425 acres, situated in the counties of Brisbane, Hawes, and Durham, was notified by proclamation dated 31st May, 1879.

Tia.—Messrs. Peter Matheson & John N'Intyre are working the only registered claim on this field, in fact to my knowledge they are the only miners in the locality. These enterprising men took possession of their claim two years back, and have up to this present time continued working indefatigably and expending a large sum of money in the venture. The shafts are situated on M'Leod's Creek, Tia Run, and on the same water. About 1 mile distant a crushing machine of five stampers (7 cwt. each) has been erected, which it is intended to work by water-wheel, a race half-a-mile in length having been cut for that purpose. 160 tons of stone have been raised and await crushing, which will take place during the month of February next (the result being 21 ozs. 16 dwts. from 24 tons of stone). Much interest is taken throughout this district in the working of this claim, each and all testifying as to the merits of the miners before mentioned.

The Tia River Gold Field is situated in the County of Vernon, parishes of Tia, Tiara, and Sheloing, and embraces an area of 450 acres, distant from the township of Walcha about 25 miles. (*Vide* proclamation, 19th April, 1879.)

Prospecting is carried on to a great extent throughout Walcha Division, but I have no official or reliable information as to results.

Miners' Rights.—I have issued during the year 1879, miners' rights, 33, and business licenses, 1. No mineral licenses have been applied for.

The requisite forms duly completed to accompany report are appended.

The gold purchased by the Banks during 1879 is as under :—

Glen Morrison.....	123 ozs.
Nowendoc	100 ozs.
Tia	22 ozs.
Total.....	245 ozs.

NEW ENGLAND AND CLARENCE DISTRICT—VEGETABLE CREEK DIVISION.

(*George H. Gower, Mining Registrar.*)

I HAVE the honor to submit my annual report on the condition and prospects of the Vegetable Creek Tin-mining District for the year 1879.

I am glad to report a considerable revival in mining matters has taken place in this district, which is undoubtedly accountable to the fact of the high price tin has been ruling in the market, the breaking up of the drought in the early part of the year, from which all the mines had suffered serious effects during the past eighteen months, and principally by the success that has attended legitimate prospecting, aided by a few accidental discoveries, in the basaltic ranges in the vicinity of this township.

Although many of the shallow workings in Vegetable Creek are rapidly getting exhausted, still I am in hopes that during the current year, 1880, the output of ore will be much the same as in 1879 from the deep mines now discovered under the basalt, and rapidly being developed. In one or two instances the yield from the Vegetable Creek shallow creek mines has not declined, and in fact the well-known Great Britain Tin-mining Company's property at the head of the creek stands this year in the premier position as regards the output of ore, which has 737 tons of tin, and although this mine has been worked for upwards of five years, shows no symptoms of decline or exhaustion. The whole of the land has been let on tribute, and 170 men are employed on it, 120 of whom are Chinese.

Messrs. Moore & Co.'s properties on Vegetable Creek still continue to be worked with satisfactory results under the tribute system.

The other mines along the creek-bed do not call for any remark since they were last the subject of report, as they are mostly in the hands of Chinese tributors, who are satisfied with a return of from £1 to £1 10s. per week per man, which they easily make by ground-sluicing the tailings and blocks of ground left in the old workings years ago, the Europeans preferring to prospect new land, which they are carrying on with laudable energy and vigour. This is a most exceptionally favourable season on account of the frequent showers and the high price obtainable for tin on the creek (£51 per ton of 74% ore) the miners with any luck cannot fail to be well remunerated for their labour, so that it is gratifying to me to be able to report that the importance and prospects of this tin-field have so much improved are of late, and are at present attracting much attention.

The deep leads found under the basaltic formation more particularly have assumed greater importance and have revealed the existence of valuable deposits which have remained so long undisturbed.

Messrs. Griffiths & Hammond during the early part of the year discovered a deposit of rich wash-dirt at a depth of 65 feet, on the property of Messrs. Irby & Co., from whom they obtained the lead on tribute. The sinking was through soft basalt and layers of pipe-clay. The wash is very rich, averaging about 2 cwt. of tin ore to the dray load; it requires puddling, for which purpose two puddling machines are erected at their sluicing works, a quarter of a mile distant from the working shaft. The wash is composed of water-worn pebbles and claystones, with a layer of cement, richly impregnated with tin. It is very hard, and sledge-hammers are used to break it down. The cement is now being thrown aside, as the miners have no means of getting the tin out. These tributors have obtained 231 tons 11 cwt. of tin from this mine, with about sixty men and boys, seven horses and three carts. This party richly deserve their stroke of luck, as they spent many months in prospecting this particular locality, having every confidence

a rich deposit of tin existed in the hill, the scene of their present operations. The lead is on the summit of a basaltic hill, and has been worked and explored in the shape of a horse-shoe round the crown of it; the depth of wash has averaged about 1 foot, and the width has been 200 feet, but at present is narrow, being only about 25 feet.

Messrs. Griffiths & Hammond are now reaping the reward of their untiring energy and enterprise by the receipt of very handsome and regular returns from their tribute lease, and their success has had the effect of causing large portions of the basaltic range west of them to be taken under tribute agreements from the original lessees; and I have every confidence that the results of these undertakings, if pursued with the proper determination, will be equally satisfactory.

In the prospecting shafts between the Vegetable Creek Tin-mining Co's old rich workings and Messrs. Griffiths and party's mine, at about 50 feet sinking, there occurs a perceptible change in the country sunk through. The basalt gets hard and of a different texture, the change being so well defined there might possibly have been *two flows of lava*. What makes me so confident on this matter is that the line of operation in Griffiths and party's mine contains the rich lead of tin and water-worn gravel which shows without doubt at once that the layers of basalt were distinct. It is the intention of this party to sink through this basaltic bottom. This presents a future of great interest, and we will watch the operations of these miners with more than common attention, as they may possibly prove of great importance by discovering a deeper and richer lead than they have been hitherto working, such as has been discovered in the lead adjoining this tribute lease on the west, at a depth of 130 feet from the surface, by Messrs. Wesley Brothers, in their mining conditional purchase of 180 acres, and a distance of 2 chains from their boundary. This is by far the richest discovery of deep deposits of tin-bearing wash-dirt that has ever yet been found in this district, and as far as at present opened out, for depth of wash and richness in tin ore, eclipses even that of the far-famed wonderful deposit of tin worked in the property of the Vegetable Creek Tin-mining Company.

The discovery of such a deep run of wash was quite accidental, as the Messrs. Wesley were endeavouring to pick up the rich lead of Griffiths and party's, which at that time presented every appearance of entering into their property, and after sinking and driving about 1,000 feet without success, they sunk a shaft near their boundary, and going through 90 feet of basalt, 60 feet of which was very hard indeed, and various layers of pipeclay. Their perseverance was richly rewarded by discovering a bed of wash-dirt. After following the rock on which they bottomed (which was dipping rapidly) a depth of about 20 feet they came upon the wash, which, so far as explored, comprises 10 feet of fine sandy creek drift, with good tin, and below this a body of coarse gravelly wash, exactly like that seen in the bed of an ordinary river, wonderfully rich in tin. The prospectors have been unable to bottom, on account of striking water at this depth; however they found a layer of payable fine sand below this into which a short-handled shovel (3 feet long) was worked down without touching bottom. A new main whim shaft is now being sunk, and when that strikes the wash it is their intention to bottom, to find the actual depth of this deposit of wash.

A drive of 155 feet has been driven in the sand (keeping the pipeclay as a roof) overlying the gravelly wash. The sand is composed principally of quartz, and crystallized in double hexagonal pyramids (these are common with porphyry auriferous rocks of this locality), and yields 56 lbs. of tin to the dray-load.

The direction of the lead, as far as can be judged at present, appears to run north-west and south-east. The tin is rather coarse, and bears a water-worn appearance; and nothing can be done to indicate the depth and width of the wash-dirt in this lead till the new main shaft is bottomed.

The drives in the sand had to be properly and securely close-timbered in every foot worked. Impressions of leaves and ferns in profusion are found in the pipeclay roof. Among the gravel there is a great quantity of boulders of all sizes, which are smooth and oval-shaped, whilst others are angular, as if just detached from the sideling. Small pebbles of quartz and other silicious rocks, also water-worn, are also found in it.

When in full working order the future yields from Messrs. Wesley's mine will speak as to the richness of it, and any further description would perhaps be considered an exaggeration. Enclosed herewith I send you a transverse section showing the sideling in Wesley's lead, as

also the various strata passed through before striking the wash-dirt. A plan of the present workings is attached as well.

That this deep extinct watercourse is a long one has been proved by several prospecting shafts. One at a distance of 200 yards westerly, which the Wesleys, after sinking 90 feet of hard basalt, bottomed on soft granite at 118 feet, dipping rapidly to the south. They followed bottom a depth of 9 feet, but had to cease work on account of foul air. A thin layer of drift and sand, with a little water-worn stream tin, was found on the bed-rock, with very encouraging prospects; and about half a mile further westerly Messrs. Fitzgerald and party sunk a shaft to a depth of 122 feet, but dropping on to fine dry sand which required boxing to keep it from breaking in, they found the work too difficult and hazardous, and abandoned it.

Messrs. Vincent and Nagle have been prospecting some purchased land on tribute, situated northerly of Wesley's and westerly of Griffiths and party's mines, and after passing through layers of soft basalt and pipeclay struck at a depth of 90 feet a deposit of rich tin-bearing wash 3 feet thick. This vein is narrow, being as yet proved only 43 feet wide. The party are now driving along the course of the lead. This is supposed to be a continuation of Griffiths's lead (10 chains distant), but the surface affords few indications whereby one can judge of the trend of the leads, and the underground explorations have not yet been carried far enough to afford data on which correct conclusions can be based. Vincent and party's find, however, bids fair to be of great value and richness, and has infused fresh energy into the various parties of prospectors, and every bit of available ground near them has been marked off and let on tribute. Work is being more energetically carried on than for some months past, and it is therefore likely that the value of this lead to the west will soon be determined.

About three-quarters of a mile westerly, Messrs. Morton and party have been prospecting in private ground on tribute, and after sinking 50 feet through layers of soft basalt and pipeclay struck a deposit of good payable wash a foot thick, composed of drift sand and clay stones, with tin well interspersed. About 50 feet of cross-driving has been done in this wash-dirt, but no effort has yet been made to discover the actual width or course of the lead, the prospectors intending to do so immediately their new main working shaft, at which they are now eagerly sinking, shall have bottomed. When opened out upon and in proper working order this claim will richly repay the labours of the prospectors. On the same ridge, a quarter of a mile distant, Messrs. Smith and party have been prospecting, and discovered, at a depth of some 20 feet, some wash-dirt carrying coarse tin. The men are at present sinking higher up the ridge, to strike the supposed vein at a greater depth, and where it may be formed into a large body of wash.

The supposed continuation of the Rose Valley rich lead, lost some years ago in Campbell and Co.'s block, was picked up by Messrs. Webb and party the latter end of the year at 90 feet from the surface. The gutter at that depth was not more than 2 feet wide, but very rich. It is wet, and somewhat difficult to work; and it would be premature to offer any opinion as to the value of it. The Vegetable Creek Tin-mining Company, in their land adjoining Messrs. Griffiths and party, on the south side, have found a payable run of wash 2 feet thick and about 60 feet wide, at a depth of 54 feet from the surface. This is no doubt the continuation of Wesley's shallow lead, which they worked a year ago, but was not so rich as it seems to be in this company's property. This is now being worked on tribute by a party of miners who are making good wages, with about twenty-two men employed. The company have excavated a small dam (to meet the present requirements), at which they have placed a 5 horse-power steam engine, which pumps the water a height of 20 feet, and is conveyed by a canvas flume a distance of 120 yards to the sluice-box, placed alongside the shaft. The dirt, after being hauled up from the mine by the horse-whip, is tipped direct into the sluice-box.

On a red ridge situated a mile northerly of the discoveries alluded to above, Messrs. Salmon and party, while prospecting there, discovered at a depth of 36 feet through pretty hard layers of basalt and pipeclay, $2\frac{1}{2}$ feet of payable wash, composed entirely of drift. The gutter is at present narrow, being about 15 feet for a length of 300 feet worked out, yielding a little over 9 tons of tin for their labour. The wash, however, seems to improve in richness, as they

drive into the hill, and a shaft now being sunk on the crown of the ridge will test the value of their property. The wash-dirt they are now getting out is very satisfactory, yielding 10 cwt. of tin per dray load. They have fourteen hands employed. This party have excellent facilities for securing a plentiful supply of water for sluicing purposes, as their lead is a little wet; the water is drained from the gutter into a deep well-hole at the shaft, which is baled out to replenish a small excavation close to their working shaft, where they have erected their sluicing appliances in a substantial manner. The prospects of this claim are highly encouraging. Messrs. Salmon and party have secured their property of 40 acres by a mineral conditional purchase. A portion of the shallower part of the lead has been let on tribute to Chinamen. This is the first instance in which I have observed the Chinese working under the basalt on this field.

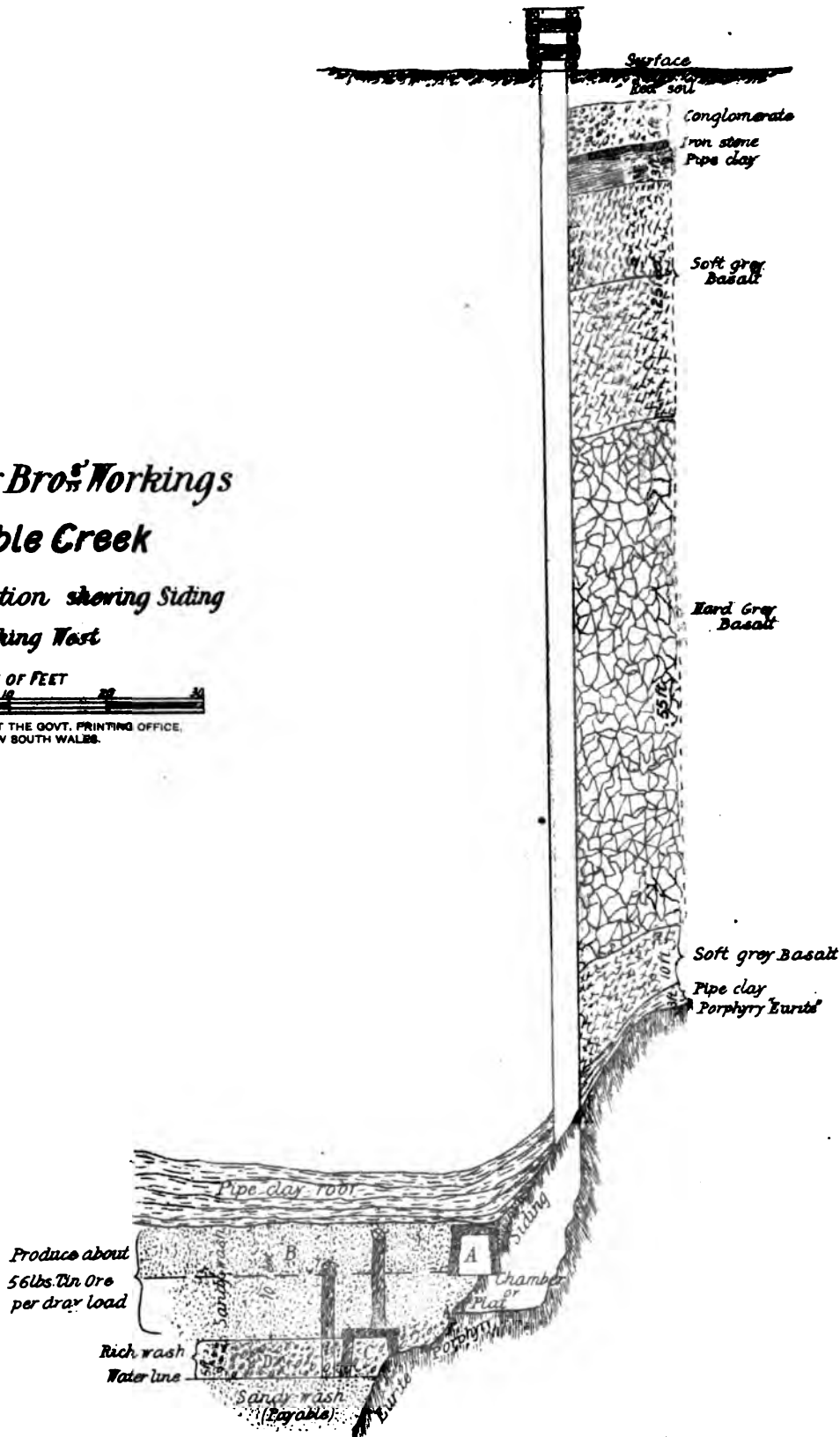
Prospecting is also being carried on with laudable energy on the basalt range, 3 miles south of Vegetable Creek, where, I may mention, Messrs. Georgeson and party obtained on tribute some land in Mr. Kennedy's paddock, on which they are busily engaged sinking a prospecting shaft; the depth at present is 150 feet, and after going through various strata are now on drift sand. The shaft had to be slabbed from top to bottom. This is the deepest shaft under the basalt yet sunk in the district, and I hope that this enterprise, which has cost the men so much labour and capital, may prove successful, and help towards the development of the large basaltic areas between the Y. Waterholes and Strathbogie.

All the companies and proprietors of large holdings on Vegetable Creek have entirely done away with the wages system, and have cut up their lands in sections of from 2 to 20 acres, which they let on tribute by tender to the various successful parties. These parties of tributors or prospectors generally number from six to twelve men, two of whom start prospecting the land, whilst their partners obtain employment under other tributors in the payable claims or otherwise, and share alike the expenses of prospecting. It will be observed that the miners and the public generally are now taking an interest and exhibiting a confidence in this industry hitherto unknown, and there can be no doubt that the increased energy and appreciation now observable will have a most beneficial effect in the development of this tin-field, and will ensure its being worked in a more regular, systematic, and exhaustive manner. As an illustration of the growing spirit of energy and enterprise in connection with mining in this district, I may state that a party of miners (Messrs. Skinner and party), obtained a tribute lease of 20 acres on the basaltic range from Mr. Gordon, on a piece of ground locally known as Shine's selection, towards which direction Wesley's deep lead trends, the distance apart being about three-quarters of a mile. The prospectors have already sunk and driven about 800 feet, which has as yet been both difficult and laborious, being for the most part through hard rock. This enterprise has already cost the men a large expenditure of capital and labour, and no return has as yet rewarded them, and unless the deep ground in which Wesley's lead occurs turns, this undertaking will I hope meet with the success it deserves, and will eventually handsomely remunerate the prospectors. Between this spot and Salmon and party's claim are several parties of prospectors actively engaged in sinking shafts, but the extreme hardness of the ground in this particular locality is a great drawback to their workings. Accounts from the prospectors at the Two-mile are not very promising, although several parties are perseveringly sinking through the hard basaltic formation, and are sanguine of striking payable tin in that locality. A large mining population is now gathering about the vicinity of Rose Valley, and the principal interest of our mining community continues to be centred in the result of the operations now going on on the deep ground under basalt, and confidence appears to be daily increasing in the ultimate success of the workings there. The excellent yield of about £10,000 worth of stream tin for the last eight months, from Messrs. Griffiths and Hammond's tribute lease, is sufficient evidence of the value of the prospecting ventures; but the thorough development of this part of the field must necessarily be the work of many months, and can only proceed gradually.

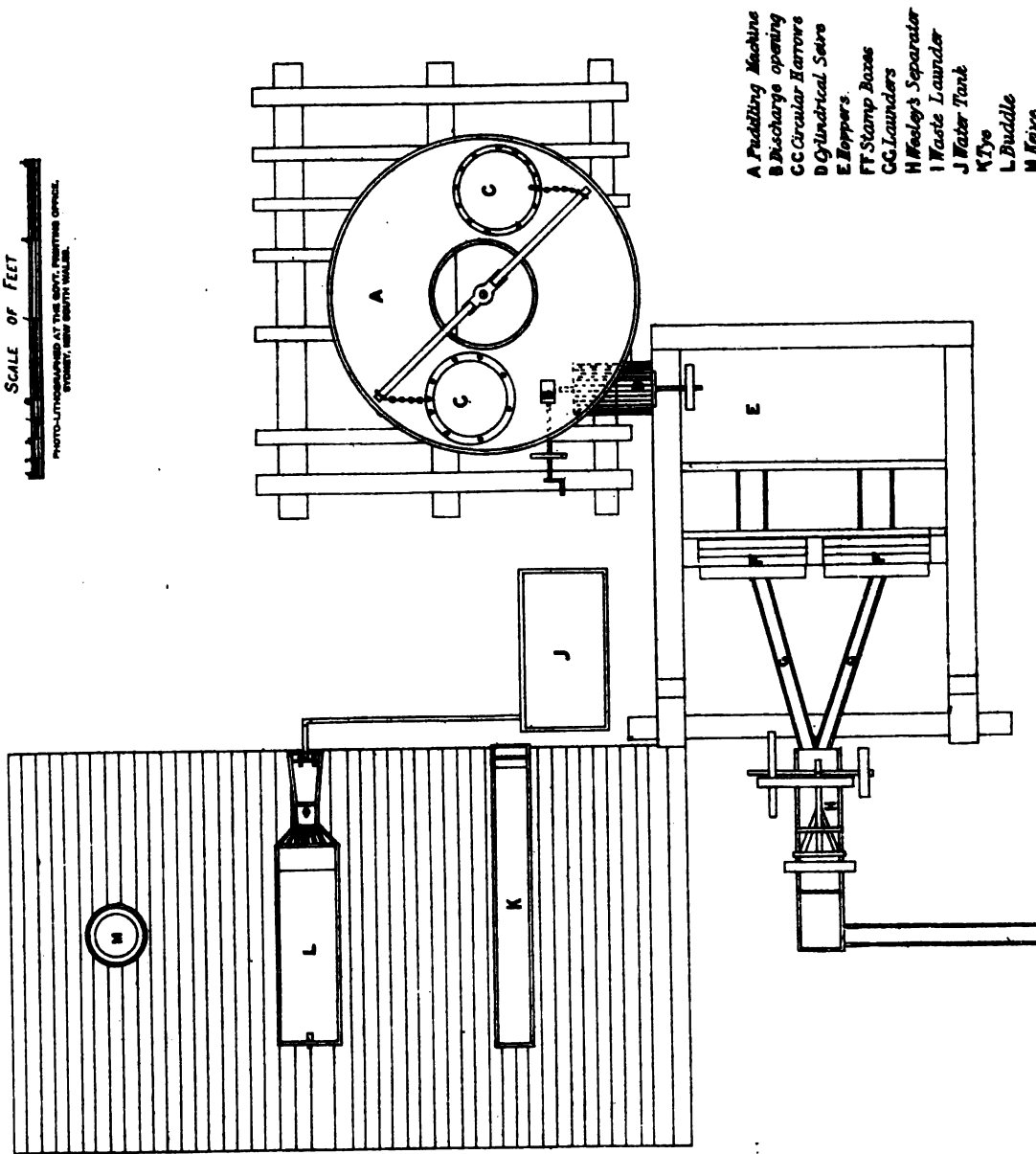
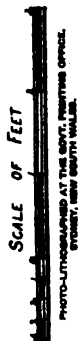
The operations of the Vegetable Creek Tin-mining Company, Limited, at the Graveyard Creek, during the past year, although very extensively carried on, have not been at all satisfactory financially. The fact is, that the whole of the tin produced by the mine has been swallowed up in expenses; when I say that until quite recently (November last) some 90 to 100 hands were at work on wages, and that tribute agreements had never been thought of, when

Messrs Wesley Bros Workings Vegetable Creek

Transverse Section showing Siding
Now looking West

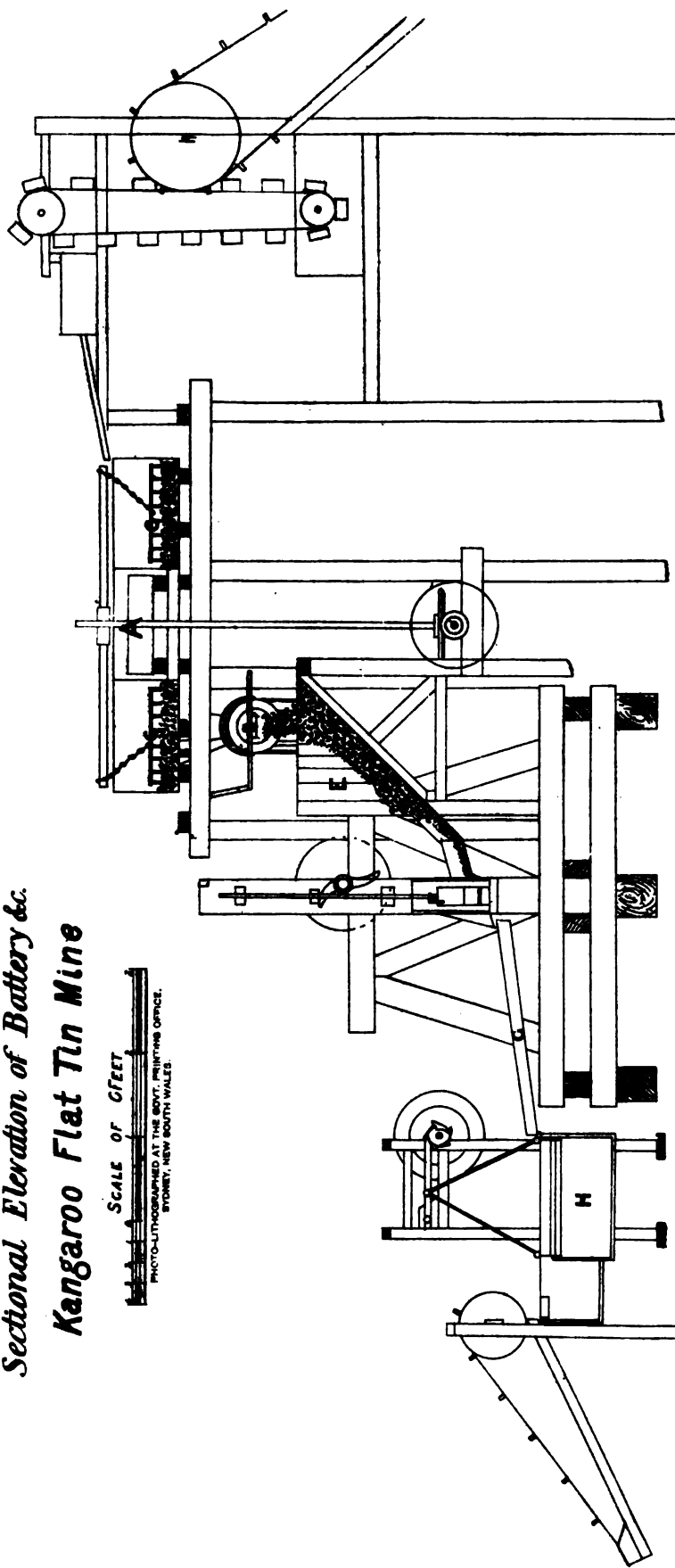


GROUND PLAN of Crushing and Dressing Plant Kangaroo Flat Tin Mine



*Sectional Elevation of Battery &c.
Kangaroo Flat Tin Mine*

SCALE OF FEET
PHOTO-LITHOGRAPHED AT THE GOVT. PRINTING OFFICE,
SYDNEY, NEW SOUTH WALES.



- A Puddling Machine
- B Discharge opening
- CC Circular Harrows
- D Cylindrical Sifter
- E Hoppers
- FF Stamp Boxes
- GG Launder
- HH Westley's Separator

the tin raised by wages was costing more than it was worth at local prices, further comment on the management is entirely unnecessary.

Since that date the property has been under the superintendence of Mr. A. Cadell, the resident director of the company, who at once did away with the wages system, and has let nearly the whole of the company's lands to tribute parties, and the yield of ore from this mine during the year 1880 will, I anticipate, be large under the new regime. The workings of this company are the most extensive in the district. Their dams at the Graveyard Creek when full of water cover an area of 7 acres. The 10 h.-p. engine pumps the water a height of 38 feet into a large wooden tank, from whence it is conveyed in a canvas hose, suspended on trellis-work, to the sluice-boxes, a distance of about 250 yards. The steam winding engine adjoins the main working shaft, and the arrangements are such that when once the bags are filled in the mine, a depth of 90 feet, the dirt requires no further loading, as the two sluice-boxes are fixed at the shaft, from whence the wash is emptied into a shoot to the head of the boxes. About a quarter of a mile from this engine-shaft the continuation of this lead has been struck in the company's property by Messrs. Ferrari and party, another party of tributors. They have about 2 feet of good payable wash at a depth of 70 feet from the surface, and their prospect of success is very encouraging. Their tramway, sluicing appliances, and other works are steadily progressing which, when in good working order, and their dam full of water, the tributors have every likelihood of being well repaid for their outlay of cash and labour.

At Messrs. Cadell and Mitchell's Y Waterholes Mine all work has been entirely suspended, the proprietors intention being to let their whole property, 540 acres M. C. P., to tribute parties.

At Messrs. M'Sorley and Swyny's claim, held under tribute from Messrs. Moore and Co., Y Waterholes, the results so far are most satisfactory. The 8 h.-p. engine pumps the water a height of 42 feet, and is carried in a flume a distance of about 100 yards to the top of the hill, the surfacing on which is ground-sluiced by races conveying the water to various points. I am glad to report that the enterprise shown by this party is being handsomely rewarded in good weekly dividends.

Mining down the Y Waterholes Creek is being conducted with vigour, with good prospects of ultimate success at the various leased tracts. At the head of the Graveyard Creek Watercourse, although the ground is otherwise deserted, a party of miners are still working away with very payable results.

Under this new system of tribute the owners of land incur no expense whatever. The tributor has to supply labour, tools, and material, and is paid ranging from £21 to £31 per ton of clean tin delivered properly dressed and bagged.

The only large property in the district being worked on wages is that of Messrs. Hall Brothers, at Kangaroo Flat. This mine still yields steady returns, and the depth and width of wash-dirt continue as promising and productive as ever. The underground explorations of this company are also very extensive. The crushing machine battery, with 9 head of stamps, and sluicing appliances and sheds are all compact, and substantially and efficiently erected by Mr. Beatty, the company's engineer, to whom I am indebted for the accompanying plan of the dressing plant at Kangaroo Flat. The wash-dirt to be operated on by the machinery consists of a gravelly wash partially cemented. The stuff when trucked out of the workings is tipped into the steam puddling machine A, where its bulk is reduced about one-third. When the mill is full, the trap-door B is opened by means of a crank and screw, and the contents shovelled through the opening, whence they are introduced into the cylindrical sieve D, the fine sand, together with all the tin that has been liberated during the process of puddling, falls through the sieve, and is conducted by a shoot (not shown in the plan) direct to the "Wesley's Separator" H, the coarser pieces are discharged out of the end of the sieve into the feed-hoppers E, and from these continuously to the stampers FF. The stuff is stamped through a wire grating having a one-eighth inch mesh; from the stamper-boxes the discharge is conducted in launders G to the separator. This machine reduces the stamped or crushed material to about one-twentieth of its original bulk, thus leaving only a very small quantity of stuff to be dressed by

hand. The partially cleaned stuff taken from the separator is first tyed, the heads taken from the tye are then placed in a Willoughby's tin-cleaning machine, which leaves it fit for drying and bagging; the remainder of the contents of the tye is then buddled L (as it contains only very fine tin ore), the heads and middles are stacked for further handling, and the tails being worthless are thrown away; the ore is thrown in the "kieve" M, by which means all the fine loam or "slum" (which will not separate from the tin ore in buddling) is taken out. The "kieve" is simply a tub about two and a half feet in depth, and is wider at the top than the bottom. The operation of "tossing" is performed as follows:—The kieve is half-filled with water, a man then communicates a peculiar motion to the water by stirring with a long-handled shovel (this operation requires some practice before it can be performed successfully), while another places the ore, a shovelful at a time, gently inside the kieve. When the water reaches the top of the kieve the shovel is withdrawn, and the edge of the kieve is struck sharply with an iron bar, which has the effect of causing the contents to settle more rapidly than they otherwise would. After the striking or "packing" has been continued for ten minutes the water is baled out, when the fine loam will be found forming a layer on the top of the tin, and may be easily removed by a steel scraper. About 40 tons of material are passed through the battery daily, and, with the appliances at present in use, one man and a boy are sufficient to do all the dressing, together with the drying and bagging of the ore.

Messrs. Hall Bros. have a couple of men out prospecting between the Sugarloaf and Surprise Mines, about 5 miles north-west from Kangaroo Flat, who have discovered 12 feet of water-worn payable wash. This has only lately been found, and it would be premature to offer any opinion as to the value of this discovery. The Surprise Mine has been let on tribute by Messrs. Irby and party, and some good wash, giving payable results, is being worked there. This portion of the district should have received more attention from the prospectors than it seems to have attracted. It might be prospected with better chances of success than many ventures nearer the township of Vegetable Creek. However, eventually I have little doubt that the country round Kangaroo Flat, Sugarloaf, The Surprise, and The Springs will be taken up and worked with advantage when the deposits near Vegetable Creek are exhausted.

On the Gulf Creek the alluvial has failed very much, but since the rise in the market I have hopes that many of the claims that have been lately abandoned will be re-taken up. The number of men at present engaged in mining in this part of the tin field is about two dozen, and they are in widely scattered parties. But little has been done towards the development of tin lodes here; however, I am still of opinion that this branch of mining is only in its infancy in the district, and when the alluvial is worked out the tin lodes occurring in this locality will command the attention they deserve. Messrs. Wilcox and party are still perseveringly working at the Yankee's Lode, the surfacing around which gives them profitable employment. Messrs. Coghlan and party for some months past have been working the alluvial ground in Brown's Gully. Until very recently their labours have not been crowned with much success. In prospecting the hill-side for the lode, which they were satisfied fed the gully in which they worked, and finally after a good deal of search, the prospectors were fortunate enough to find two lodes, both carrying good tin. Up to the present time the claim has not been sufficiently opened out to allow of any trustworthy estimate being formed as to the value of the discovery, but, so far as can be judged, should pay well. One of the lodes has not been sunk on, but the surface stones appear very rich in tin. The other has been traced on the surface a length of about 50 feet, and it has been sunk upon to a depth of 6 feet. At that depth it is about 10 inches in width, carrying first-class tin. On Clifford's lode but little work has been done since it was discovered; however, at a depth of 12 feet the owners succeeded in raising some excellent stone from their lode, and from the specimens I saw there they give indications of the claim proving a rich one.

A block of 20 acres of land at Duck Creek, Gulf, was applied for through this office, for the purpose of mining on it for bismuth. The ground is at present under dispute, and no one working there. The original prospectors, Messrs. Chapman and Anderson, however, appear to be sanguine of being well repaid for their discovery of this metal, which, they inform me, they found in large pieces in the bed of the creek while sluicing for stream tin.

Some of the leases at the Mole Tableland previously tested and abandoned as unpayable have recently been re-occupied, and the holders are now confident that they can be worked to advantage. The Dutchman's and Byrnes's lodes have not been worked the past year. These are two good properties, and when opened out and properly worked will prove remunerative, and richly repay any outlay incurred. Bismuth is found on the same hill as Byrnes's lode, and many pieces weighing up to 2 oza. have been ground-sluced off the surface. Messrs. Stacey Brothers, at Blather Arve Swamp, and Carter and party, at Scrubby Gully, are doing a good deal of quiet steady work in connection with both their holdings, and are quite satisfied with their returns. The other alluvial workings at the Mole Tableland have not of late been of any great importance, and lately have chiefly been confined to the gullies and flats in the immediate vicinity of what is known as the Nine-mile Creek. Some more than ordinarily rich claims have been found there, and this has induced a more thorough prospecting of ground which had hitherto been considered as worthless. About 3 miles northerly from this creek a belt of basaltic country is being prospected by Messrs. Trewbella and party, and it is not at all improbable that the prospecting under this spot may lead to a discovery of a payable lead, and if discovered there will be a considerable area of ground to take up, in which a continuation of the lead may be supposed to run, and some encouragement would thus be given to those parties who are doing so little at the Mole Tableland to try some other portions of this basaltic belt, where it might reasonably be presumed a lead would be found to exist. Down Tucker Gully Messrs. Montgomery and party are working their leaseholdings with payable results.

Mining matters at the Silent Grove, Baldrock Creek, and the northern portion of my district, are not looking so well as they did, but it is probable that the former place will be in full work soon, when prospects may brighten up. Bismuth has been found at Silent Grove, but no work has been done of note to test the value of this discovery.

At Baldrock Creek I regret to state that the party of miners formed to work the wet ground at the swamp have been compelled to suspend their operations, and that no success has attended their endeavours to subdue the water and work the ground satisfactorily.

About 30 men find profitable employment in the alluvial at the Glen Creek, and it is believed that they will continue to do so for many months. It is the intention of Messrs. Chapman and party to cut a race 2 miles long from the Flaggy Creek to some ground giving good prospects at Bullock Swamp. The cutting of the race from the junction of the creek is turning out harder work than they expected. Several parties are getting good tin out of the bed of Glen Creek, and should the weather continue dry they may continue to do so for some time to come, but should the creek rise at all they stand a chance of being flooded out.

At the Tent Hill Creek and Washpool Creek work is progressing well, and a number of Chinamen are mining there. Nearly all the leases taken up lately in this locality are busily at work, the most of them with very favourable prospects.

The advantage of getting their ore smelted at Messrs Reid and Moffatt's smelting works, Tent Hill, is, I am glad to say, being gradually recognized by the miners. Only one furnace has been kept going night and day during 1879, during which period they received and reduced 884 tons of ore. To meet the requirements of the mining community another furnace has been built at these works, both of which the proprietors are confident of keeping at work constantly during the current year, not only by the large quantity of tin Messrs. Reid and Moffatt may buy, but also from the promises of support given them by the Vegetable Creek Tin-mining Company and one or two other large companies, besides many small companies of miners, who I may yet hope to see reaping fair profits from their ventures in deep sinking. 302 tons of metal were shipped through Queensland and 280 tons *via* Grafton by the smelting works. By the tabular list of tin ore raised in this district you will observe that the yield for 1879 was 2,715 tons 6 cwt. of tin, which is 779 tons 11 cwt. in excess of the previous year. The number of miners in this tin-field is a little over 1,000 hands engaged at present in mining, of whom about 350 are Chinese. The population is increasing daily, and the township of Vegetable Creek has all the appearance of a flourishing business town. Work seems now to be pretty general, and if the improvement in the deep ground continues we may expect to see even greater activity and a

larger number of hands employed. In conclusion, I cannot but look forward to a great future for the mining interests in Vegetable Creek, where the tin-bearing country seems almost unlimited in extent, and is developing riches far beyond any previous conceptions of its resources.

THE total yield of Tin Ore from the Vegetable Creek Tin-mining District, from the commencement of mining operations, in the year 1872, to the 31st December, 1879.

Name of Company or Mine.	Yield of Tin Ore during							Total yield from each mine or locality from 1872 to 1879.	Total.
	1872 & 1873	1874.	1875.	1876.	1877.	1878.	1879.		
DEEP LEADS.	Ts. cwt. qrs.	Ts. cwt. qrs.	Ts. cwt. qrs.	Ts. cwt. qrs.	Ts. cwt. qrs.	Ts. cwt. qrs.	Ts. cwt. qrs.	Ts. cwt. qrs.	Ts. cwt. qrs.
The Vegetable Creek Tin-mining Co. (Limited.)	103 19 0	234 0 0	741 12 0	715 18 0	181 4 0	139 5 0	248 19 0	2,454 17 0	
Campbell & Gibson's Mine (now T. Cubis.)	.....	.....	.....	217 0 0	.....	.....	4 10 0	221 10 0	
Irby & party (late Ardern's, Rose Valley.)	127 0 0	40 0 0	.....	55 12 0	.....	4 0 0	9 0 0	235 12 0	
Kangaroo Flat (Hall Bros. & Co.)	10 0 0	50 0 0	.....	3 10 0	28 0 0	106 0 0	112 0 0	309 10 0	
Irby & party (Griffiths and Hammond's Tribute.)	.....	.....	.....	.....	.....	.....	231 11 0	231 11 0	
Weasley Bros. (Rose Valley) ...	.....	.....	.....	.....	.....	7 10 0	21 3 0	28 13 0	
The Springs (Hall Bros. & Co.)...	6 0 0	10 0 0	.....	.....	.....	.....	.....	16 0 0	
Surface Hill (Glen Creek) .....	.....	.....	40 0 0	.....	.....	3 5 0	5 10 0	48 15 0	
Wm. Procter & party (now J. Hill)	.....	.....	.....	.....	9 0 0	7 0 0	8 0 0	24 0 0	
Surprise Mine (Irby & party) ..	.....	.....	15 0 0	17 0 0	16 10 0	8 16 0	57 16 0	115 2 0	
Cadell & Mitchell (Y. Water-holes Mine)	.....	.....	.....	.....	.....	.....	31 0 0	31 0 0	
Salmon & party (Red Ridge)....	.....	.....	.....	.....	.....	.....	7 0 0	7 0 0	
Total yield of Tin from Deep Leads, 1872 to 1879 .....	.....	.....	.....	.....	.....	.....	.....	.....	3,723 10 0
SHALLOW WORKINGS									
CREEK CLAIMS.									
The No Mistake Mine (Campbell & Co.)	30 0 0	80 0 0	30 0 0	4 0 0	10 10 0	15 15 0	29 10 0	249 15 0	
The Great Britain Tin-mining Company (Limited.)	28 0 0	120 0 0	431 0 0	547 9 0	225 17 0	519 1 0	737 0 0	2,068 7 0	
Tomison's (now the property of Great Britain Co.)	85 0 0	70 0 0	.....	.....	.....	.....	.....	155 0 0	
Little Britain, formerly } now	20 0 0	100 0 0	105 0 0	128 2 0	81 0 0	76 12 0	37 5 0	545 19 0	
Ashton's } Irby & Co.	.....	.....	.....	.....	.....	.....	.....	.....
Little Wonder, formerly } Irby & Co.	95 0 0	65 0 0	139 0 0	133 2 0	92 0 0	50 0 0	36 6 0	610 8 0	
Maund & Co. } Irby & Co.	.....	.....	.....	.....	.....	.....	.....	.....
Moore & party (including Little Minnie Mine.)	334 0 0	410 0 0	450 0 0	300 0 0	320 3 0	361 15 0	170 2 0	2,346 0 0	
Baalammon (Lee & others)	240 0 0	120 0 0	180 0 0	117 2 0	61 3 0	32 0 0	24 0 0	774 5 0	
Nonpareil (A. Cadell)	316 0 0	150 0 0	122 0 0	51 2 0	21 0 0	3 0 0	22 0 0	635 2 0	
Vegetable Creek Mine (Hall Bros. & Co.)	230 0 0	120 0 0	30 0 0	78 0 0	80 0 0	57 0 0	51 0 0	606 0 0	
Rothschild's (Moore & Co.)	150 0 0	110 0 0	115 0 0	85 0 0	62 10 0	206 18 0	234 0 0	963 8 0	
Six-mile (Hall Bros. & Co.).....	90 0 0	80 0 0	60 0 0	36 0 0	40 0 0	26 10 0	44 0 0	376 10 0	
Gordon's	38 0 0	40 0 0	30 0 0	5 15 0	14 10 0	7 5 0	8 10 0	194 0 0	
Gramplains (Hall Bros. & Co.) ..	30 0 0	100 0 0	40 0 0	27 0 0	.....	6 10 0	51 10 0	245 0 0	
Tent Hill (Hall & Co., Moore & Co., and others)	195 0 0	60 0 0	50 0 0	46 0 0	15 0 0	8 0 0	38 0 0	412 0 0	
Tent Hill Creek (including M'Master's.)	107 0 0	40 0 0	10 0 0	37 0 0	8 0 0	42 0 0	31 0 0	275 0 0	
Glen Creek (Banca, Glen Lode, and other Companies.)	46 0 0	70 0 0	49 0 0	38 0 0	21 0 0	15 0 0	49 0 0	288 0 0	
Gulf Creek (including 194 tons Gulf Stream Co.)	72 0 0	50 0 0	75 0 0	62 0 0	232 0 0	88 10 0	84 0 0	663 10 0	
Mole Tableland (Silent Grove, Nine-mile, and other localities approximately.)	200 0 0	30 0 0	100 0 0	78 0 0	50 0 0	30 0 0	102 0 0	635 0 0	
Y Water-holes Creek (Big Ben, Graveyard, and other M. Ls.)	34 0 0	50 0 0	80 0 0	77 12 0	14 10 0	62 15 0	55 5 0	374 2 0	
Y Water-holes Creek (Moore & party.)	15 0 0	.....	.....	155 10 0	105 5 0	31 18 0	60 6 0	367 19 0	
Irby & party, Tent Hill (Connolly's Tribute.)	.....	.....	.....	.....	.....	29 10 0	14 3 0	43 13 0	
Total yield of Tin from shallow workings, 1872 to 1879 .....	.....	.....	.....	.....	.....	.....	.....	.....	13,568 18
Total	2,591 19 0	2,249 0 0	3,042 12 0	3,008 14 0	1,749 2 0	1,935 15 0	2,715 6 0	17,292 8 0	17,292 8 0

NEW ENGLAND AND CLARENCE DISTRICT.

(Mr. Warden Graham, P.M., Tenterfield.)

I do myself the honor to submit my annual report on the mining district under my charge for the year ending 1879.

The most important mining now in this district is for silver, which mineral exists over a considerable area in the vicinity of Boorook.

Gold-mining is slowly improving. The Lunatic and Perseverance reefs are coming more into notice, and good stone is now being raised. The works at Poverty Point, to bring in water, have not as yet been completed.

During the past year thirty-seven applications for gold-mining leases have been made at this office, eight at Boorook, and one at Lionsville. The greater number of these applications are for silver-bearing lodes at Boorook. One application for mineral lease has been made at this office and fifteen at Wilson's Downfall.

Although the surveys are not yet in my hands, I have been informed by Mr. Mining-Surveyor Drummond that nearly all the necessary surveys of lease application have been made.

Boorook.—In order to obtain reliable information with respect to the silver mines at Boorook, I considered it advisable to visit that field, and personally inspect the various lodes and workings thereon. On my visit I found some improvement had been made since my last inspection. The lodes have also been developed to a greater extent. While in the vicinity I made a complete inspection of the various workings, plant &c., and visited all the mines in which work had been done.

In my previous reports I have described Boorook to be situated about 20 miles north-east of Tenterfield; distance by road about 30 miles. The country is mountainous, and the lodes can in many places be worked by tunnels or adits to a considerable depth. The lodes are in belts of slate and felspar porphyry; the ore is in quartz reefs or lodes containing iron pyrites and seams of oxide of iron; in many cases the pyrites are rich in silver and gold.

The best developed lode on the field is the Golden Age, the property of Messrs. Horton, Funnell, and party. The area of this lease is only 2 acres, but the amount of work done, and the yield of silver, is something considerable; nearly all the silver won from Boorook has been the yield of this lease, and comparatively speaking, only a small portion of the lode has been worked. The following is a table of the yield which also shows the progress made in the process of extraction.

Yield of silver from Golden Age Lease:—

From May to 31 December, 1878...	...	...	...	...	4,128
„ January to 30 June, 1879 ...	...	...	...	...	8,049
„ July to 31 December, 1879...	...	...	...	...	10,711
Total yield ...	...	...	...	...	22,888

It is anticipated that the yield will now rapidly increase. I may state that the yield for the last six months of last year was from a much smaller quantity of ore than the previous six months; this is accounted for by improvement in treating the ore.

There are three shafts on this lease, the depths of which are as follows:—North shaft, 115 feet; middle shaft, about 70 feet; and south shaft, about 50 feet. The reef has been partially sloped out to the 70 feet level. The northern shaft is being sunk for the purpose of prospecting the lode. To the 70 feet level the lode has averaged 2 feet wide, the ore being a chloride of silver, yielding by assay an average of about 80 ozs. to the ton. The walls are a red and white clay slate, intersected with seams of oxide of iron. The dip of the reef to this level is about 1 in 6 west. On descending deeper in the northern shaft the stone rapidly changes, and at the 80 feet level the lode is strongly impregnated with iron pyrites, which carries the greater part of the silver; the walls change to a blue slate; the dip of the lode also changes to about 1 in 3 west from this level to the 100-feet level. From the 100-feet level down the lode makes a still greater dip west, the walls become harder, more solid, and better defined. At the bottom of the shaft, 115 ft. deep, the walls are well defined,

and the reef looks promising ; it is about 2 feet wide, and will average an assay of about 60 ozs. to the ton. Following the reef south, in the drive at the 70-foot level, a "horse" or "break" comes in, which divides the lode into two seams, the western of which was followed, and has now again made into a good reef about 3 feet wide, carrying rich silver. The ore at the 115-foot level is, I think, changed from chloride to a sulphide ; the mine is still quite dry. The treatment of the deeper ores will probably have to be different from the present process.

The weekly yield of this lease is now about 800 to 1,000 ozs. retorted silver, which is sent through Queensland.

No. 1 South Golden Age is a 4-acre lease, owned by Messrs. Hall and Carmichael, in which two shafts have been sunk. The Golden Age line of reef has not yet been struck, but a good leader or lode has been sunk on to a depth of about 50 feet from which a cross-cut is now being driven to cut the main lode. This lease adjoins the Golden Age, the "horse" or fault, which I have previously alluded to in that lode, has turned it to the west of the shaft. It will probably be found shortly in the cross-cut drive. This promises to be a very valuable property.

No. 4 North Addison Reef adjoins the above lease on its south boundary. It is the property of Carr, Ellis, and party. Nothing has been done on the lease for some months, it having been registered for the suspension of work. The lode found in this lease was originally supposed to be the continuation of the Golden Age lode, which was lower down, called the "Addison." It is now evident that it is not the same reef, nor does it contain the ore in the same state as the Golden Age. The ore is a sulphide, and the silver is more difficult of extraction ; in fact, there are no appliances yet on the field by which it can be treated. Several roasting furnaces are in course of erection in order to treat this kind of ore, and registration for the suspension of work for nearly all the leases on this line have been granted. There is an adit about 65 feet to cut the Addison Reef and a shaft about 40 feet on this lease.

No. 3 North Addison, owned by Messrs. Horton and Funnell.—This lease is in a similar position to No. 4 north. The work done is an adit to cut the Addison Reef, 80 feet, and a shaft about 40 feet.

No. 2 North Addison, owned by Messrs. Simmons, Donaldson, and others, is a 4-acre lease on the Addison Reef. Depth of shaft, about 50 feet, with a good quantity of stone to grass awaiting treatment.

No. 1 North Addison, Flannery and party, 4-acre lease, on the Addison line.—A considerable amount of work has been done on this lease, and a large quantity of stone has been raised. The first shaft is on a very large reef, average over 12 feet wide, but the richness of the stone was not satisfactory. The proprietors are now sinking another shaft on better prospects.

The next lease on this line is known as the Addison Prospecting Lease, the property of Horton, Funnell and party. It has been registered for some time for the suspension of work. It was found the ore, which is supposed from assays to be rich, could not be treated by the Wheeler's pan process, and that it would require roasting. The proprietors are now erecting furnaces for this purpose. Work has been resumed on the lease, and rich stone is now being raised. The leases on this line of reef to the south of the prospecting lease are at present idle, awaiting means of treating the ore ; very little work has been done in them.

Returning to the Golden Age Reef, north of Horton's Golden Age lease is No. 1 north, a 4-acre lease, owned by Messrs. Westhorm, Simmons, and Dickson. This is a very valuable property, and is at present working on tribute ; a treating plant is also in course of erection to work in connection with this lease. The prospecting done on the Golden Age lease has proved this ground to a depth which insures its permanency. The 115-foot shaft is only about 20 feet from the southern boundary of the lease. A shaft has been put down to a depth of 70 feet, the lode is 18 to 20 inches wide, with slate walls similar to the same depth in the Golden Age lease. Good stone is now being raised from a drive in the 70 feet. The leases north of this have not been prospected sufficiently to find the reef.

The Grand Junction Reef is situated to the south of the Addison, which reef it intersects about 30 chains south of the Addison Prospecting Shaft. I have previously described this reef in my various reports as being a very promising one, the walls are slate, reef perpendicular, and the ore is a chloride. Assays of samples from this lode have shown rich silver and gold ; the

ore has not yet been satisfactorily treated. The leases on it are held by Brown and party and Ferguson and Yates. There are two shafts sunk to a depth of about 40 feet; both show a well defined reef (see assays at end of report).

The Golden Crown Reef is about 30 chains west, and running parallel to the Addison, and also supposed to cut the Grand Junction line. Several leases have been taken up on the line of reef; only on one has any work of consequence been done, that is on a 4-acre lease held by Messrs. Moffatt and party. A very rich seam of ore has been followed for about 40 feet; at a deeper level it was not so good. The shaft is down 74 feet, on a well defined reef, between slate and porphyry. An adit is in from the side of the hill along the line of reef; it cuts the main shaft at about 50 feet below the surface. About 50 cwt. of stone from the shaft was sent to England for sale or treatment; it assayed after crushing and mixing for the purpose of sale (and was sold in the assay) as follows:—

						oz.
8 bags ...	{	gold	...	...	...	2.9
		silver	...	...	...	182.0
17 bags ...	{	gold	...	...	...	3.25
		silver	...	...	...	251.0
17 bags ...	{	gold	...	...	...	3.10
		silver	...	...	...	217.14
7 bags ...	{	gold	...	...	...	2.9
		silver	...	...	...	153.11

This could not be called picked stone, as it was all obtained out of the shaft to the 30-foot level, and was nearly all the stone then raised. The ore will require roasting. A kiln of about two tons of stone is now on the ground which shows good silver through it.

There are many promising reefs in the locality in which (with the exception of the John Moffatt Reef) little work has been done. Messrs. Moffatt and party have put down a shaft on their reef 50 feet, when the water got too much for them. They are now driving an adit from the gully to drain the shaft; the adit is along the line of reef; the reef shows well, and some rich stone has been obtained from it.

About 2½ or 3 miles north-west of the vicinity of the reefs above described there is another field. The principal reefs discovered are the Woolshed and Alderman, from which good assays have been obtained. A shaft is now being sunk by Messrs. Johnston and party on the Woolshed, and the lode looks very promising. The Alderman is on the surface a well-defined reef, one assay of stone from which gave a result of over 370 oza. silver to the ton. The stone on being burnt shows good silver.

There are many other reefs and lodes silver bearing at Boorook too numerous to mention in this report; among those which have the appearance of eventually proving payable I may mention the Clifton, Oriental, Curran, and Leviathan.

In order to develop this large extent of argentiferous country it will require time, capital, and experience. Very little has been done yet, but this year I hope to see a marked improvement. As soon as the reducing plants now in course of erection are fairly at work a great impetus will be given to the industry, and a great number of miners will be employed.

The machinery at present on the field consists of—1st. Mr. Thos. Horton's plant. There are two engines, one 8-horse and one 6-horse power; these work a 3-stamper battery, four Wheeler's pans, a Burdan machine, and a separator. About 30 tons of stone per week can be treated when the machine is in full work. It is at present engaged on ore from the Golden Age, that being the only one that can be treated by the process. The yield is from about 800 oza. to 1,000 oza. silver for every full week's work. The process, although remunerative, is not satisfactory. A great percentage of silver is lost. The proprietor is now erecting furnaces for roasting the ore. Good fireclay for bricks is found in the vicinity.

2nd. Moffatt and Co.'s machine is situated on Sawpit Gully, close to the reefs. The position is a good one. Water is saved by a good dam, which will hold from four to six months' supply. There is also a dam to save waste water, which, if necessary, can be pumped back. The battery is built for twenty head of stampers; only five at present erected. It is the intention of the owners to extend operations as soon as satisfactory results are obtained. There are two Wheeler's pans, and two Denny's pans; the Denny's pans were at work on my visit. The result of the

working had not been ascertained. The arrangements of this machine are very complete, and can be extended to a very much larger plant. Various parcels of stone have been experimented on; the results as yet are not very satisfactory. The machine has only just started working, and experiments only have been tried. The proprietors are now erecting furnaces for the better treatment of the ores. The whole arrangements are a great credit to the proprietors, and an evidence of their faith in the richness of the various lodes with which they are connected. Moffatt and party are at present employing twenty-three men.

3rd. Hall's machine is now in course of erection; it is situated on the Cataract River, within a short distance from the reefs, to which there is a good road. Nearly all the machinery is on the ground. Water will be lifted from the river by force-pump; the lift will be about 120 feet. The proprietor intends commencing with five stampers, three Denny's pans, and two Wheeler's pans. The battery can be arranged for ten stampers.

4. Westhoven, Dennis, and Hardaker, to be called the Excelsior Silver-reducing Works, is situated at the junction of Sawpit Gully and the Cataract River; good road and close to the reefs. This machine is to work in connection with No. 1 North Golden Age lease; the proprietors are the tributors working that lease. The engine is now on the ground; the plant will consist of 10 horse-power engine, 3-stamper battery, 4 amalgamating barrels, and a separator. The water is brought to within 17 feet of the level of the machine by an iron pipe from the Cataract River.

5. Hutchinson and M'Gregor's machine is at present idle; the proprietors are directing their attention to the Lunatic Gold Reefs.

6. Lower down Boorook Creek there is a waterfall of over 100 feet. At this site, which is an excellent one for water-power, Mr. Millar has erected a water-wheel, to take advantage of water-power for his reducing plant. The water-wheel, which is now completed and in its place, is 25 feet in diameter, overshot; it will have a constant head of water, and will work a 5-stamper battery, which is now erected. After crushing the ore will be dried and burned in "Stetefeldt" furnaces, which are now in course of erection; it will then be amalgamated in barrels. The drying the ore is done by the waste heat and smoke from the furnace. There are two good roads for the conveyance of stone to this machine. The battery can be enlarged to carry 10 stampers.

Several other machine sites have been taken up, and will, if results are satisfactory, be utilized.

The population of Boorook is now over 300; miners' wages from £2 5s. to £2 10s. per week.

I may here mention that Mr. B. Davy, who has had twenty years experience as manager of a large Silver-reducing works in Spain, has a very complete laboratory at Boorook; and I am much indebted to him for information and for some interesting assays which he kindly made for me on my late visit. The particulars of these assays and some other assays which he has been good enough to give me are attached to this report.

As silver-mining is a new industry in this Colony, and as Boorook is now attracting some attention, I have made a more elaborate report on the field than perhaps under other circumstances would be necessary for a yearly report.

Gold.

Gold-mining is, as I have stated, slowly improving. At Lunatic several old deserted claims are again taken up and are being worked with satisfactory results. There is only one small battery on the field at present, but I am informed that another will shortly be put there. There are about 30 tons of stone at the battery awaiting crushing, which is estimated to go 2 ounces. Want of water is delaying the crushing.

During the year 1 ton of stone from the Perseverance Reef was sent to Sydney for treatment. It yielded 50 ozs. gold.

Messrs. Hutchinson & M'Gregor are sinking on Lunatic Reef; they are now 70 feet. The reef is 1 foot wide, and will average about 4 ozs. to the ton. On the Lunatic prospecting claim, owned by a Sydney company, an adit is being put in to drain the shaft. On the Perseverance Reef two parties are working on good gold; the same on the Golden Crown Reef. Messrs. Gray & Co. are driving an adit to cut the reef at about 150-feet level. The Victoria

Reef, a new find, is turning out good stone. I expect before the end of this year to see a great improvement in the yield of this field.

On Poverty Point very little progress has been made since my last report, although there has been constant work. The big tunnel is not yet through; the rock has turned out harder than anticipated. The tunnel is for the purpose of bringing water on for hydraulic sluicing. There is still about 5 chains of very hard rock to get through. The work was undertaken and commenced about two years ago by the Surface Hill Sluicing Company; it has already cost a large sum of money. During the year some ground-sluicing has been done, I don't know with what result.

Some discoveries have just been made in the country between Timbarra and Fairfield. The specimens I have seen are very rich, and as the whole of that country is auriferous, and has not been much prospected, it is not unlikely that good finds will be made.

At Dalmorton very little is doing. Reefing is completely at a standstill. About twenty-one men are engaged in alluvial mining.

There is only one claim working at Tooloom. A few men are making wages on alluvial at Boonoo Boonoo, and there is some chance of the reefs in that locality being again worked.

I have no information from Lionsville and Solferino.

Tin.

The tin-mining industry in this district has considerably suffered during the past year, principally in consequence of the low price of ore during the greater part of the year. The late rise in the price of the metal in the English market is already giving a fresh impetus to the miners, and abandoned ground will again be worked if the present price holds. Some good finds in the banks of the creeks have been made lately. No reefs or lodes have been found, and the workings are now in the banks of creeks which have been previously worked. Amos & Co.'s mine, on the Herding Yard Creek, is still yielding well.

Mining generally in the district under my charge is improving.

The following are the results of assays referred to in my report :—

Result of assays made for Warden Graham by Mr B. Davy—

	ozs. per ton.
No. 1, stone, from Golden Age Reef, deep shaft, 115-feet level, blue quartz impregnated with iron pyrites ...	52.24 silver gold not separated
No. 2, stone from Addison Reef, Lease No. 2 North ...	191.15 silver 4.75 gold
No. 3, stone from Addison Lease No. 2 North ...	171.43 silver 4.10 gold
No. 4, Golden Crown (Moffatt and party), rich blue seam quartz ...	812.09 silver 9.11 gold
No. 5, John Moffatt Reef, stone from tunnel ...	32.65 silver gold not separated
No. 6, stone from Grand Junction (Ferguson and Yates), blue quartz ...	212.25 silver 2.50 gold
No. 7, Woolshed Reef, rich stone, picked, hard white quartz with blue stains ...	163.25 silver 0.75 gold
No. 8, Woolshed Reef, poor stone, nearly white quartz ...	26.12 silver gold not separated

Copies of results of assays made from samples of stone from Golden Age Reefs at Boorook, by Mr Davy :—

Stone from small vein in Golden Age Reef	...	...	480	ozs. per ton.
Sample of crushing from battery	...	...	45	silver
Sample of tailings	...	...	20	silver
Sample of crushing, Golden Age Reef, from battery	...	...	56	silver
Sample tailings from same	...	...	14	silver
Do.	...	...	18	silver
Sample crushing, Golden Age Reef, from battery	...	...	85.25	silver

NEW ENGLAND AND CLARENCE DISTRICT—BOOROOK DIVISION.

(M. J. Synge, Mining Registrar.)

I HAVE the honor to hand you herewith my report for the year ending December 31st, 1879.

I have endeavoured to get full and reliable information respecting the principal mines, and the quantity and value of the metal won, of machinery erected, and general information of the present state and future prospects of the district.

As the claims at Boorook are so numerous, I have compiled the information obtained in a tabulated form, as being most convenient for reference, and have accompanied them with short remarks upon the workings of the principal mines in separate sheets.

The persistent progress of this place during a time of general mining and monetary depression has been remarkable, and merits congratulation. The immense value of the resources of this district in the richest metals is now established. The future progress will much depend upon the quantity and the efficiency of the machinery now being erected to treat the various ores found in the mines.

The quantity and value of metals realized to date is unknown. Messrs. Horton and Funnell have extracted 25,000 ozs. of silver, valued at £5,520 sterling. The value of the machinery erected is £6,500, and that of machinery in course of erection about £10,000.

The population of these mines is estimated at about 300. There is a Post Office, Money Order, Mining Registry, and Warden's Office, two stores, one baker, three public-houses, one wine shop, two butchers, and a chemist and druggist. The want of a Telegraph Office and a school is much felt by the residents.

The development of the field has been grievously delayed from the want of knowledge in the science of metallurgy and mineral chemistry. The pioneers were working in the dark, and the aids of science were indispensable as a foundation of successful manipulation and ultimate prosperity.

This desideratum is now supplied. Messrs. Horton and Funnell and Mr. B. Davy, a gentleman thoroughly conversant with all mining and metallurgical operations, have established a complete and well appointed laboratory, where assays and analyses are now performed with the utmost precision.

The miners recognize their great obligations to Mr. Warden Graham for his frequent visits to the mines to hold Warden's Court and the transaction of general business, thus saving them the tedious journey to Tenterfield for that purpose.

The mines are reported to be well managed and efficiently secured. I regret to say an accident occurred in No. 1 North Addison, by which a miner lost his life by falling down a shaft, but no blame was attached to the management.

Messrs. Horton and Funnell are preparing for several improvements in their system of working by the addition of furnaces and additional mechanical appliances in their reduction

works. These gentlemen are deserving of every support for their perseverance in spite of difficulties which have elsewhere been regarded as insurmountable, and it is gratifying to find the results from their labours are eminently encouraging.

Messrs. Moffatt and Flannery are also preparing for additional mechanical appliances, and have erected a large dam immediately above their works, at a cost of £300, which, it is anticipated, will hold three months' supply of water for their reduction purposes.

Messrs. Westhoven and party, Hall and Co., and Müller are vigorously pushing forward the re-erection of their machinery, and I anticipate the return from these mines will shortly be considerably augmented. In conclusion, I have little doubt should sufficient skill be brought to bear upon the lodes it will be found that this district presents an extensive field for the profitable employment of capital, and that silver will shortly form a most important mineral product.

Golden Age.—Lease of 2 acres; proprietors, Messrs. Horton, Funnell, & Co.—During the past year work has been vigorously continued in this mine. Fifteen men are constantly employed sinking to prove the lode at a depth and raising ore. There are now three shafts sunk of the respective depths of 120 feet, 70 feet, and 20 feet, and two levels driven at 50 feet and 70 feet, a total length of 550 feet. 1,400 tons of ore have been treated by the proprietors, from which 25,000 ozs. of metal have been won. The lode continues to improve in width and solidity at greatest depth; the latest assays from the 120-foot level have given from 68 to 72 ozs. of silver and 1 oz. of gold to the ton. The assays made by the Mines Department and other competent assayers have proved the average contents of the ore, as taken from the reef, to vary from 40 to 80 ozs. per ton, and many samples have assayed as high as 500 ozs. of silver and 10 ozs. of gold to the ton. They commence sinking No. 2 shaft from the 70-foot level immediately, for the purpose of proving the value of the lode at greater depth in this portion of the mine.

The bullion which has been forwarded to the Mint from this mine assays 0·980 fine silver, and contains about 1 per cent. of gold. About 100 tons of the more refractory ores are stacked awaiting the erection of suitable appliances for treating them, which are in course of construction by the proprietors.

Silver King.—Lease of 4 acres, north of Golden Age; proprietors, Messrs. Westhouse, Hardaker, & Co.—On this mine a shaft has been sunk to a depth of 76 feet and a level driven at 50 feet. About 120 tons of ore have been raised, 10 tons of which have been treated with very satisfactory results; and the proprietors are now engaged in erecting machinery, and there is every indication of this proving a very valuable property.

The Mariners.—Lease of 4 acres; proprietors, J. J. Brown & party.—This lease is registered for suspension of work awaiting the erection of appliances on the field for the treatment of the ores raised. One shaft has been sunk to a depth of 60 feet, and three levels have been driven, and a large quantity of ore raised. The results of trial crushing are not published.

Several other leases are occupied along this line, north of the Mariners, from which I have failed to get reliable information. The furthest is named the North Pole, where there is some remarkably good-looking ore raised.

Lease of 4 acres, south of Golden Age; proprietors, Hall, Carmichael, & party.—On this claim three shafts have been sunk of the respective depths of 50, 50, and 20 feet. A cross-cut is commenced at the 50-foot level with the intention of intersecting the continuation of the Golden Age Reef. About 150 tons of ore have been raised, 20 tons of which are now in course of a trial treatment by Denny's pulverisers. The ores in this mine are similar to those in the Golden Age.

Addison No. 4.—Lease of 4 acres (adjoining south); proprietors, Messrs. Ellis, Carr, & Co.—The lode which appears on the surface of through this selection is supposed to be a continuation of the Addison Reef, and which bears north in the direction of the Golden Age. Along the precipitous side of the range a shaft has been sunk to a depth of 40 feet, where the

reef is broken and underlies to the east, then suddenly changes to the west. A tunnel has been driven 70 feet into the hill from the creek level, which is expected to intersect the reef at 100 feet.

Addison No. 3.—Lease of 4 acres (adjoining south); proprietors, Messrs. Horton and Funnell. In this selection a shaft is sunk on the reef to a depth of 20 feet. The reef here is better defined than in the preceding claim. A tunnel has been driven some 80 feet from the siding to intersect the reef. About 25 tons of ore have been raised and await treatment.

Addison, No. 2.—Lease of 4 acres (adjoining south); proprietors, Messrs. Simmons, Donaldson, and party.—On this claim there is a strong well defined lode 6 feet wide. A shaft has been sunk 35 feet, and there are 100 tons of stone at grass awaiting treatment. A trial crushing has been made and given very favourable results, but not in proportion to the assay made, which has varied from 40 to 252 ozs. of silver and 4 ozs. of gold to the ton.

Addison, No. 1 North.—Lease of 4 acres (adjoining south); proprietors, Messrs. Flannery, Moffatt, and party.—On this lease a shaft has been sunk to a depth of 58 feet, with a reef 15 feet in width, and apparently rich in silver ores. There are about 100 tons of ore raised awaiting treatment.

Addison Prospecting Shaft.—Lease of 4 acres; proprietors, Messrs. Horton, Funnell & Co. On this claim a shaft has been sunk to a depth of 75 feet, and a level driven south along the line of reef. A cutting has also been opened from the south end of this claim. 200 tons of stone have been raised and 50 tons treated, from which very favourable results have been obtained. There are now about 150 tons of ore awaiting treatment.

Addison No. 1 South.—Lease of 2 acres; proprietors Messrs. Horton, Funnell, & Co.—The reef in this selection is broken and undefined, and there has been great difficulty in finding it. Two deep cross-cuts have been opened and a shaft sunk on a vein 35 feet deep, from which 25 tons of ore have been raised and await treatment.

The Golden Crown.—Lease of 4 acres: proprietors, Messrs. Moffatt, Flannery & Co.—On this selection one shaft has been sunk to a depth of 75 feet and a level driven along the course of the lode 129 feet. At a depth of 40 feet from the surface the reef varies from $2\frac{1}{2}$ to 18 inches, carrying gold and silver.

An assay made from surface stone taken from this reef gave the enormous yield of 459 ozs. of silver and 5 ozs. of gold per ton. A parcel of $2\frac{1}{2}$ tons of ore was sent from this mine to England at the commencement of the year, to the well-known Silver-reduction Works of Messrs. Johnson, Mathey, & Co., London, and the result of their treatment has given satisfaction to the proprietors, the yield per ton being 251 ozs. of silver and $3\frac{1}{2}$ ozs. of gold.

Curran's Reef.—Lease of 6 acres; proprietors, Messrs. Moffatt, Flannery, & Co.—On this lease a shaft has been sunk to a depth of 35 feet on a reef about 8 inches in thickness, but at this depth the lode split up into a number of small veins, and the sinking has been for the present discontinued pending further surface explorations. A tunnel has been put in at the southern boundary along the course of the lode a distance of 130 feet at a depth of 25 feet from the surface. About 30 tons of stone have been crushed, which gave results that are considered satisfactory, but I have not been able to ascertain them.

The John Moffatt.—Lease of 4 acres; proprietors, Messrs. Moffatt, Flannery, & Co.—A shaft has been sunk upon this lease to a depth of 55 feet. The reef is about 2 feet thick and underlies to the west. 20 tons of stone have been crushed, and notwithstanding the stone yielded well by fire assay, the returns were not up to expectation, but the proprietors are preparing better methods of treating their ores.

The Leviathan.—Lease of 4 acres; proprietors, Messrs. Moffatt, Flannery, & Co.—On this lease a shaft has been sunk to a depth of 40 feet upon a lode $2\frac{1}{2}$ feet in width and underlaying to the west. 5 tons of ore have been treated, but I have not been able to ascertain the results.

Grand Junction.—Lease of 4 acres; proprietors, Messrs. Ferguson & Yatea.—A shaft has been sunk to a depth of 50 feet and 40 tons of ore raised, 10 tons of which the proprietors have had treated with very favourable results. They are now engaged in driving along the course of the lode and raising stone.

Woolshed.—Lease of 4 acres; proprietors, Messrs. Johnson and party.—On this lease a shaft has been sunk to a depth of 20 feet, from which 10 tons of stone have been raised, 4 tons of which the proprietors have had treated, which yielded very satisfactorily. The lode in this reef is about 2 feet wide and well defined.

On the Nil Desperandum work has ceased for a time, owing to the late proprietors (Messrs. Horton & Funnell) having failed to keep within the regulations, and thereby forfeiting their lease, and the present holders not yet having made a start.

On Hurley's and several outside leases work is being pushed forward, the proprietors being engaged in sinking and prospecting their holdings.

Several applications for leases upon the Alderman line of reef have been made, but no work has been done beyond surface prospecting.

Timbarra, once the richest gold field in this district, is situated on the highest granite range. The workings have all been alluvial sluicing, and have supported a considerable population during the past twenty years. Neither capital nor mechanical appliances have ever found their way there, though it is believed there are important gold deposits awaiting them. The business places comprise one European and two Chinese stores, one public-house, and a post office. The population is chiefly Chinese. Some Europeans have settled down and made comfortable homes there. The population is estimated at from 100 to 130. The quantity of gold purchased by the local storekeepers during the year from the local workings and Poverty Point has amounted to 2,094 ozs. At Poverty Point some extensive hydraulic sluicing works are in progress. The Surface Hill Company have expended a large amount of money in cutting races, building high flumes to convey the water over an extensive flat, and in driving a tunnel through a mountain to convey the water to their workings. When these works are completed the company have a most promising future. The present value of their plant is about £2,000. A full description of this extraordinary mine would be interesting, but I have not space to give it in this report. There are about twenty Europeans and a number of Chinese at work in this locality.

At Tooloom, Messrs. Martin, Sandford, & Co., the proprietors of the Pioneer Reef, have crushed 30 tons of stone, which yielded 61 ounces of gold. Ashpole and party have been unable to wash up, owing to the scarcity of water in their race. There are about fifteen miners at present employed there. The total returns of gold have been about 120 ounces for the year. There is a water-wheel and five head of stampers employed on the mines, the property of the Pioneer Company.

At Pretty Gully the miners are chiefly engaged in fossicking. The population being of a migratory character does not average over thirty-five miners. The returns from these mines to the end of the year have been 722 ozs. 1 dwt. of gold, valued at £2,580 9s.

The Lunatic mines are likely to have a revival. Several important discoveries have been made lately in the new and in the old workings, and a considerable quantity of ground taken up under the Extended Claim Regulations.

The Lunatic Reefs have lately produced some remarkably rich stone, which was sent to Sydney for treatment. Results have not been reported to me. The Victoria Reef has been re-opened, and is producing some rich stone, and several other claims have been re-occupied. Messrs. Gay & Co., proprietors of the Golden Crown Reef, are driving a tunnel from the creek level, and will strike the reef at about 90 feet level.

The Perseverance Reef lately produced 100 tons of rich stone. The proprietors hand-crushed specimens, which yielded 3 ozs. to the ton, and the local machine crushed the balance of the ore, which produced $1\frac{1}{2}$ oz. to the ton, making a total of $4\frac{1}{2}$ ozs. to the ton.

The machinery consists of a stationary engine and a three-stamper battery, besides a Chilian mill.

The population has considerably increased during the last few months, but I have been unable to obtain the exact number now resident on the mines. During the year I have issued 102 miners' rights and 11 business licenses; but a number of miners' rights have been issued in other places.

PARTICULARS respecting some of the deepest Shafts which are now being worked, and showing the yields of

No. Block.	Lease.	Name of Company.	Name of Reef.	Description of Mine.	Depth of Shafts.	Deepest Levels.	Width of Lode.	Dip.	Bearing.
142	31	Horton & Funnell.....	"Golden Age"	Silver Lode	114, 70, 20 feet ..	75 feet	2 to 6 feet	West	S.E. and N.W
144	32	do.	"Addison"	do. ..	75, cut 35 feet ..	50 feet	6 feet ..	....	N. and S.
154	37	do.	do.	do. ..	25, adit 70 feet ..	....	....	....	....
155	35	do.	do.	do. ..	20, adit 75 feet ..	....	....	....	....
156	34	do.	do.	do. ..	35 feet .....	....	....	....	....
157	33	do.	do.	do. ..	35 feet .....	....	....	....	....
210	69	do.	"Clifton"	do. ..	Cut 30 feet .....	....	2 feet ..	East .....	....
214	68	do.	"Oriental"	do. ..	Cut 50 feet .....	....	2 feet ..	....	....
153	56	Hall & Company	"Golden Age" (South)..	do. ..	50, 50, 20 feet....	50 feet	2 to 4 feet	West .....	....
		Moffatt & Flannery	"Addison"	do. ..	58 feet	58 feet	16 feet ..	....	....
		do.	"Leviathan"	do. ..	40 feet	40 feet	2½ feet ..	....	....
		do.	"Curran's"	do. ..	35 feet	25 feet	8 inches.	East .....	....
		do.	"John Moffatt"	do. ..	55 feet	55 feet	2 feet ...	West .....	....
		do.	"Golden Crown"	do. ..	75 feet	40 feet	1½ foot ..	....	....
		Ferguson & Yates.....	"Grand Junction"	do. ..	50 feet	40 feet	18 inches	Vertical ..	N.E.
		Johnson & Company ..	"Woolshed"	do. ..	20 feet	20 feet	2 feet ..	South	E. and W. ...
		Westhoven & Company.	"Golden Age" (North)..	do. ..	76	50 feet	2 to 6 feet	West	S.E. and N.W.
		Brown & Company	"Mariner's"	do. ..	60	20 feet	2 feet ..	....	N. and S.
		Buckingham & Company	"Hurley's"	do. ..	Sinking .....	....	1 to 6 feet	....	....
		Horton and Funnell....	"Nil Desperandum" ..	do. ..	Surface prospect- ing	....	....	....	....

* Appliances for the treatment of these ores are now in

Metals in the Boorook Division of the Clarence and New England Mining Districts during the year 1879.

Depth Quartz got.	Tons Quartz Raised.	Tons Crushed	Tons waiting treatment	No. of Men employed.	How operated upon.	Total yield of Metals.	Value of Metals won.	Remarks.
From surface to 114 ft.	1,563	1,463	100	15	Wheeler's Pan Amalgamation Process.	24,900 ozs.	£ s. d. 5,414 10 0	*100 tons of ore waiting treatment are sulphides.
do. 75 ft.	200	50	150	4		16 "	7 12 0	*150 do. do. sulphurets.
25 ft.	25	....	25	4		.....	.....	* 25 do. do. do.
20 ft.	25	....	25	2		.....	.....	* 25 do. do. do.
25 ft.	100	....	100	4		.....	.....	*100 do. do. do.
25 ft.	25	....	25	2		.....	.....	* 25 do. do. do.
do. 12 ft.	50	20	30	4		52 ozs.	11 10 0	* 30 do. do. do.
do. 10 ft.	50	15	35	4		18 "	7 0 0	* 35 do. do. do.
do. 50 ft.	150	30	120	4		150 "	22 10 0	*120 do. do. sulphides.
do. 58 ft.	100	....	100	2		Information withheld.	.....	*100 do. do. sulphurets.
do. 40 ft.	20	5	15	2			.....	* 15 do. do. do.
do. 25 ft.	40	20	10	2			.....	* 10 do. do. do.
do. 55 ft.	20	20	....	2			.....	.....
do. 75 ft.	80	50	30	2		Returns withheld	.....	* 30 do. do. do.
do. 50 ft.	40	10	30	2		.....	.....	* 30 do. do. do.
do. 20 ft.	10	4	6	2		43 ozs.	10 8 0	* 6 do. do. do.
do. 76 ft.	120	10	110	2		120 "	26 0 0	*110 do. do. do.
do. 80 ft.	150	50	100	2		Returns withheld	.....	*100 do. do. do.
.....	....	....	....	2		.....	.....	.....
Surface.....	24	24	....	4		22 ozs.	10 10 0	This claim was forfeited by Horton & Funnell, from complaint made by J. Hanson, and has remained idle ever since.
	2,792	1,781	1,011	68		25,416 ozs.	5,520 0 0	

course of construction by the several proprietors on the field.

M. J. SYNGE,
Mining Registrar.

TABLE showing all Machinery at work and idle in the Boorook Division, for the year ending 31st December, 1879.

Number	Name of Company.	Description of Machinery.	Aggregate horse-power of steam engines	Value.
1.	Horton & Funnell	1 Portable engine	8 H.-P.	
	" "	1 " "	6 H.-P.	
	" "	4 Wheeler's pans	In full work.	£2,500
	" "	1 3-stamp battery		
	" "	1 Berdan pan		
	" "	1 Separator		
	" "	1 Set tables		
2.	Moffatt & Flannery	1 Portable engine	8 H.-P.	
	" "	1 Amalgamator	In full work.	£2,500
	" "	1 Concentrator		
	" "	1 Separator		
	" "	2 Wheeler's pans		
	" "	1 5-stamp battery		
3.	Hutchinson & M'Gregor	1 Portable engine	12 H.-P.	
	" "	2 Wheeler's pans	Idle at present.	£1,500
	" "	1 Berdan		
4.	Mr. J. W. Hall	1 Stationery engine	20 H.-P.	
	" "	2 Denny's pulverisers	In course of erection.	Value not ascertained.
	" "	1 10-stamp battery		
	" "	1 Wheeler's pan		
	" "	1 Set amalgamating barrels		
	" "	1 Berdan		
5.	Mr. J. Miller	1 Water-wheel	25 H.-P.	
	" "	1 5-stamp battery	In course of erection.	Value not ascertained.
	" "	2 Amalgamating barrels		
	" "	1 Set furnaces		
	" "	1 Concentrator		
	" "	1 Separator		
6.	Westhoven & Hardaker	1 Portable engine	10 H.-P.	
	" "	2 Wheeler's pans	In course of erection.	Value not ascertained.
	" "	1 5-stamp battery		
	" "	1 Set amalgamating barrels		
7.	Horton & Funnell	Furnaces and additional silver-saving appliances	In course of construction.	Value not ascertained.

M. J. SYNGE,
Mining Registrar.

NEW ENGLAND AND CLARENCE DISTRICT—DALMORTON DIVISION.

(W. F. Poole, Mining Registrar.)

THE effects of the mining mania of 1872-3 are now fully realized in the total abandonment of the whole of the quartz reefs in my division, and although sixty-four distinct lines of reef have been discovered, the majority yielding over an ounce to the ton, not a solitary quartz-miner remains to try his luck.

The reefs here may never prove very rich, but after seven years' residence and close observation, I venture to predict that this will become the centre of one of the most extensive reefing districts in the colonies.

Since the discovery of the reefs at Mount Mitchell a few prospectors have gone out to try the head of the Little River.

In alluvial mining there is a slight improvement, and as more attention is likely to be directed to this branch of mining during the ensuing year it may lead to something new being discovered.

NEW ENGLAND AND CLARENCE DISTRICT—LIONSVILLE DIVISION.

(James Fisher, Mining Registrar.)

THERE is a complete stagnation in vein mining here, only two parties of two men each and one latter being at work on the reef.

Mr. R. A. Bertie arranged with the now defunct New Lion Gold-mining Company to crush the refuse quartz on the tip, and to treat the tailings. He worked at this until the mine and plant were sold to Messrs. Hall Bros. & Co. This firm continued Mr. Bertie's experiment for some time, and also took out a few tons of quartz from the 150-foot level, and tried some from the Shellmelleer mine. As none of these parcels offered sufficient inducement to them they dismantled the battery and are now removing it to Boorook.

In the Reform Company's mine there has been no work whatever done by the company. The battery, which had been destroyed by fire, has been re-erected for the Insurance Company by Messrs. Chapman & Co., engineers, of Sydney, who have made a most complete job of it.

Mr. Bertie, after ceasing work at the Lion mine, tried to arrange with the Reform Company for tributing their ground, but the agreement which was sent up for his signature did not meet with his approval, so that the matter fell through, and he has now, with a gentleman from Grafton, arranged to work the Pucka antimony mine, which is situated on some land which has been purchased by Messrs. Smith Bros., of Gordon Brook, by means of volunteer land orders.

The Band of Hope mine has been worked by a party of, originally, four men, who persevered in the face of great difficulties for several months, when two of them left the party; the others continued to work for some time longer, when they also had to abandon it, as they did not succeed in getting gold enough to pay their expenses.

There is a party of two men, backed by two others, trying the Lombardy Reef in the once renowned Laird and Bacon lease. They are driving a tunnel at a shallow depth, but have not yet found gold. The alluvial miners appear to have been somewhat more successful this year than last, one party of two men having made £3 per week during the year, and most of the others have paid their way, but have had nothing to spare.

A party of five men have nearly completed a fine piece of work on the Ewengar Creek: a very large and hard bar has hitherto prevented a considerable run of this creek from being worked, although several parties attempted it, and could always get good prospects. There was such a quantity of dirt to shift, and so much water to bale, that they could not work a sufficient quantity of ground to pay them. Two of these men by searching through the dense scrub and carefully examining the country around found a way through a saddle, where by driving about 200 feet and some distance of open cutting they could get a drainage fall of from 25 to 30 feet. This they have now nearly finished, and expect to get into auriferous ground in about a month, when, instead of having to lift their dirt for about 7 feet and pump the water, they can run all off, and as their supply of water is good, I have no doubt they will make it pay well. Business is, naturally, very slack and everything dull; there are however no idlers here.

NEW ENGLAND AND CLARENCE DISTRICT—WILSON'S DOWNFALL DIVISION.

(Wm. Hicks, Mining Registrar.)

I DO myself the honor to forward my annual report on the progress of the tin mines in the Wilson's Downfall Sub-Division of the Clarence and New England Mining District for the year 1879.

I regret to say I am unable to send in proper returns describing the different workings on this field, in consequence of the beds or main courses of the different creeks having been worked previously and the best portion of the ore taken out, the present workings being only patches in the banks of the creeks, and washing tailings which have been treated before. The principal mine on this field is that of A. and R. Amos, at Amosfield, under the management of Mr. Wm. Seaman, and worked by parties of 20 Europeans and 100 Chinese on the tribute system, who have raised 225 tons of ore during the year.

The total amount of tin ore raised on this field during the year is 709 tons, of the value of £25,524, being a decrease upon the year 1878 of 398 tons. This decrease I believe can be accounted for by the extraordinary low price of tin ore during the first nine months of the year,

it being worth only £31 per ton here for that period, which in some instances would not pay the expense of raising the ore. Therefore a great number of the miners had to leave the district for other fields. But I am glad to say a re-action has taken place during the past three months, in consequence of the recent rise in the value of the ore, it being now worth £43 per ton here, and the mining population is increasing every day. The total number of miners on this field at present is 67 Europeans and 250 Chinese, and all seem to be making fair wages. I have sold 33 miners' rights, 10 business, and 37 mineral licenses during the year. Mineral licenses seem to offer the most inducement to the working miners here. The drawback seems to be leaseholds under the old Act, which in some instances are not worked, and cannot easily be forfeited, the conditions having been complied with.

NEW ENGLAND AND CLARENCE DISTRICT—TENTERFIELD DIVISION.

(J. Simons, District Registrar.)

I do myself the honor to forward the annual report for the year 1879. On the whole it has been a little more prosperous on the gold-fields at Boonoo Boonoo than the preceding one. So far as quartz reefing is concerned, none has been worked, although the diggers state that there are good reefs in the locality, and only want time and money to develop same. As to the alluvial mining, I may state that only nine men have been working from time to time on these fields. The gold obtained during the year is about 170 ounces, so far as I can ascertain from the miners and others in that locality. The wash is all alluvial, and the deepest sinking about 10 feet, but the gold is got principally on the surface, and all the work is done by sluicing.

These fields have been worked for the last twenty years, and about some twelve years since were almost abandoned; still those few men at work seem to just make a living, but are in hopes of doing better, as there seems to be no doubt but that payable gold will at some future time be struck.

The wash-dirt is of a sandy loamy nature, and the gold easily extracted. The gold obtained is very much mixed with silver, which is the cause of the gold bringing so low a price, the average price being £2 10s. per ounce.

COBAR MINING DISTRICT—BOURKE DIVISION.

(Mr. Warden Grant, P.M., Bourke.)

I do myself the honor to submit my annual report on the mining district under my charge for the year 1879. Five gold-mining leases—area 109 acres—have been taken out during the past year. In the same year two mineral leases have been applied for. The lessees inform me that they can do but little work until rain comes. Prospectors are at work and have sunk about 20 feet. They have to cart water for their own use from a private tank about 5 miles away. The different claimholders are about to send some of the stone to Forbes, on trial, and if the result is satisfactory they purpose to erect a crushing machine on the Darling River, at Bourke. The river has ceased to be navigable for the present, and it may be many months before a machine could be obtained. The stone will have to be very rich to make gold-mining profitable in this district.

The Great Cobar Copper Mine is flourishing. The ore is abundant and good, and everything is in good working order.

COBAR DISTRICT—BOURKE DIVISION.

(B. A. Layard, Mining Registrar.)

I have the honor to forward you my report as Mining Registrar for this district, for the year 1879.

In the first place, I think that compared with previous years for this district that mining, both gold and other minerals, is steadily on the increase, and that if it were not for the scarcity of water that same would further improve, but on that account it has been greatly retarded, as it would require most of the capital for water cartage.

The number of gold-mining leases issued for the year was 5, and mineral leases 2.

The issue of miner's rights greatly exceeds any previous year, the number issued being 35, the most in any previous year being 6.

Great Cobar Copper Mining Company, Limited.

IN compliance with your request, I have much pleasure in furnishing you with the accompanying information respecting this company's mine, which I will divide into two parts. First, detailing the extent to which the mine has been opened up, and the appliances erected for working it; and second, the progress made during the half-year ending to-day:—

FIRST PART.

Four shafts, known as Becker's, Barton's, Hardie's, and Renwick's, have been sunk on the same line of lode. Becker's to 324 feet; Barton's (580 feet south) to 324 feet; Hardie's (166 feet south of Barton's) to 234 feet; Renwick's (264 feet south of Hardie's) to 280 feet. Drives have been put in and levels opened out at the 15, 26, 39, and 54-fathom levels, as shown on working plan sent herewith. At the 15-fathom level Barton's, Hardie's, and Renwick's shafts are connected; at the 26-fathom level all four shafts are connected, with the exception of about 47 feet; at the 39-fathom-level 740 feet have been driven on the lode, but the shafts are not yet connected; at the 54-fathom level only 84 feet of drives have been put in.

Appliances.—At Barton's shaft (which is the main working shaft) a 40 horse-power engine has been erected, and is found to work admirably, hauling everything from Barton's and Becker's shafts, and working sawmill, ore crackers, crushers, &c. At this shaft the poppet-heads and landing stage are both substantial and extensive. The ore, when delivered on the floors, passes through the crushers, and is delivered in trucks underneath. The trucks are run on a tramway 1,600 feet to the furnaces. There are 1,370 feet of branch tramroads, communicating with Becker's shaft and other parts of the mine.

Smelting Works.—We have now ten furnaces, all most substantially built and covered in; seven are employed reducing ore, two in roasting regulus, and one refining. The copper as refined is placed in the "copper shed," and delivered therefrom to the carriers. We have also two good brick sheds, two pug mills, two kilns, &c., &c. All the buildings on the mine are very substantial, and in first-class condition.

SECOND PART.

Progress made during half-year.—Becker's shaft, 54-fathom level, the end being driven south, has been extended 12 feet, and is now in 32 feet from shaft. The lode here is 24 feet wide, with good walls, and consists of solid yellow ore of high percentage. At the 39-fathom level the drive south has been extended 127 feet, and is now in 239 feet, leaving only 52 feet to be driven to connect this shaft with Barton's. At the 26-fathom level the drive south has been extended 65 feet, and is now in 347 feet, leaving 47 feet to be driven to connect with Barton's shaft.

Barton's Shaft.—At the 54-fathom level a plat has been cut in the lode, cutting the western wall. The width of the lode here is unknown. We have cut across it 36 feet, but have not yet found the eastern wall. It is composed of exactly the same high percentage yellow ore as exists in Becker's shaft at the same level. At the 39-fathom level the end north has been extended 91 feet; the end south has been extended 40 feet, and is now in 106 feet from shaft. At the 26-fathom level the drive north is in 186 feet from shaft. These various drives prove the lode to be of immense width, and have opened up immense bodies of good profitable ores. Other different ends have been driven 93 feet, and winzes sunk 52 feet, all proving the lode to be composed of good ores, in addition to ventilating the mine.

10,442 tons of ore were raised. 7,005 tons of ore were smelted, producing equal to 1,015 tons of fine copper. 1,040 tons of copper were refined. The two additional furnaces referred to in my last report have been completed, also shed over same. Branch tramroads, from the main line to the different furnaces, have been erected. No. 11 furnace is now being erected. I have made over 80,000 fire-bricks, and find that the fire-clay now being got, about 25 miles from the mine, makes a very superior fire-brick. The stock of firewood and charcoal on the mine has been considerably increased. The stock of ore on the mine has also increased, owing principally to the want of appliances for dressing the poorer ores. These are now being erected, and when completed, the stock of ore now on hand will be gradually reduced.

In conclusion, I must say that everything is in thoroughly good working order, and the immense bodies of ore in sight cannot fail to be highly satisfactory to the shareholders, and promise good returns for many years to come.

The output of copper for the past three years is as follows:—

1877.	Ore smelted,	4,880 tons,	yielding	523 tons	fine copper.
1878.	"	8,390 "	" "	1,457 "	" "
1879.	"	12,600 "	" "	*1,890 "	" "

This shows a steady yearly increase.

The output of fine copper for 1880 is estimated at 2,500 tons.

HUNTER AND MACLEAY DISTRICT.

(*Mr. Warden E. A. Sharpe, Copeland North.*)

I HAVE the honor to submit my report for the past year on the Barrington Gold-fields.

2. These gold-fields are situated about 12 miles north-west of Gloucester; and that town, which consists of two public-houses, a post and telegraph office, a store, police station and lock-up, and a few private houses, is distant 62 miles from Raymond Terrace. Persons desirous of visiting Copeland, as the township formerly known as Back Creek is now called, can do so without much trouble, expense, or loss of time. The route from Sydney is by steamer to Raymond Terrace, and from thence by a line of coaches, belonging to Messrs. Tuck and Company of West Maitland, to Copeland. The whole journey, including a night in Gloucester, occupies some thirty-four hours, and the cost, exclusive of expenses for food, &c., amounts to £1 15s.

3. The township of Copeland North is situated on a small creek called Back Creek, a tributary of the Barrington River, and is placed in a most undesirable situation, being at the bottom of a gorge or valley, between steep ridges, and in the middle of what was a dense brush, such as is common in the Port Stephens district. There are two townships, called respectively Copeland North and South. The former, which is at present the principal place of business, is at the junction of the two main branches of Back Creek, called respectively the Right and Left Hand Branch. The latter is on the Left Hand Branch, about $1\frac{1}{2}$ mile south of Copeland North. The two townships will doubtless in time become one; in fact they are now nearly connected as it were by one long street; and there are houses at short intervals between the two places. It is I think much to be regretted that the township was not established below the brush, which extends about $1\frac{1}{2}$ mile north of the present site, where a township, called the village of Barrington, has been laid out on Church and School Lands. This is an excellent site, consisting of open forest land, with undulating ridges, sloping gradually to a flat which bounds the creek. This township is well laid out, with a wide main street and the necessary reserves, &c. The lots of $\frac{1}{4}$ acre were put up for sale on the 18th of June last, but few of them were sold. Copeland North labours under the disadvantage of being at the bottom of a narrow valley, with very high ridges on both sides, clothed with a dense tropical growth of trees, brush, and vines, which prevent the cool winds from reaching the town. The houses have no space at the back. The spur is very steep, and consequently the main street is very narrow, and on the edge of the creek, into which all the drainage must run, and from which the water supply is mostly derived. If the population becomes large, and it is probable that in course of time it will, I fear that in the summer season fever and other ailments arising from want of drainage will cause great loss of life. The climate of this district is healthy, but very warm and moist, the thermometer registering about 90 degrees in the shade during the summer months. The population of Copeland North and South and the neighbourhood is I believe over a thousand, and was more numerous a few months back; and I believe I am correct in stating that not more than a dozen deaths have occurred here since the diggings was discovered, and none of these deaths were I think due to the climate. The inhabitants do not, except when compelled to, depend on the creek for water for drinking purposes, that water being hard and full of minerals, rendering it very unwholesome. There appears to be a regular rainy season here, and dams or reservoirs of

* Valued at £114,000.

sufficient size could I think, from the nature of the country, be easily made, and without incurring great expense, to supply a very large population. At the present time, rain having fallen at short intervals during the summer months, and most of the houses having iron roofs and iron tanks, these have supplied sufficient rain water for domestic purposes, but I think that the question of water supply needs the immediate attention of the inhabitants.

Before concluding my remarks about the township, I am glad to state that the inhabitants thereof are as a rule a very orderly, respectable class of miners, and set a good example to some towns in this district which have been in existence many years longer.

4. The reefs may be divided into those situated on the Right Hand Branch Creek and those on the Left, the reefs on the Bowman Falls, and those on the Bowman River. Besides these a considerable number of reefs have been discovered within a circumference of 20 miles of this place, at Kerripit, Rawdon Vale, and Cobark, also at Burneal Creek. The other places in this district where mining is being carried on are at the Little River and Cherry-tree Creek. I will endeavour to describe briefly each of these mining localities in turn, commencing with the reefs on the Right Hand Branch. I may remark here that the first gold lease taken up on Back Creek was applied for on the 25th of November, 1876, by Mr. Denis Driscoll, on what is called the Rainbow line.

The Right Hand Branch.—The principal reefs in this locality are those known as:—

The Rose and Thistle.
The Prince Edward.
The Lady Matilda.
The Bengal Tiger.

BUCKLEY'S FLAT, RUBBLE REEF, AND MILLER'S REEF.

The Rose and Thistle.—The prospectors are Messrs. Cripps, Ireland, and party, who discovered this line of reef, on the surface, about two years ago, and their holding consists of a 3-acre lease. The reef averages from 2 inches to 2 feet in width, and has been traced over 600 yards. The bearing is east and west, and the underlay 1 in 3 north. Messrs. Cripps and party have done a good deal of work in their mine, and with satisfactory results. They have sunk one shaft 30 feet and stoped the same distance; also an underlay shaft 45 feet, with drives of 10 feet on each side, and a main shaft of 60 feet, connected by a drive with the underlay shaft above mentioned. The quartz obtained from these workings yielded nearly 2 ozs. to the ton. There are other reefs not named running through this lease, which have yielded some rich specimens and a fair crushing. From one of these reefs 13 ozs. were dollied from 26 tons, which, when put through the mill, gave a further return of 1 oz. 13 dwts. per ton. There are eight or nine leases applied for on the Rose and Thistle line, and of these five are at work.

No. 1 West of the prospectors is a 4-acre lease, the property of Messrs. May, Robertson, and party, who have sunk a shaft 60 feet on the line of reef, from which they have had payable crushings, one parcel of 39 tons giving 3½ ozs. to the ton. As in Messrs. Cripps and Co.'s lease, there are several reefs, apparently distinct veins, running through No. 1 west, and these are parallel and close together. Messrs. May and party dollied by hand from one of these veins 180 ozs. of very coarse gold. A crushing of 75 tons gave 170 ozs.; another of 10 tons gave 26 ozs.; and another of 5½ tons yielded 31 ozs. 13 dwts. The average width of these veins is from 4 to 27 inches.

No. 2 West may also be considered a payable lease. It is the property of Messrs. M'Neally and party, and consists of 2 acres. This party have sunk three shafts, each 45 feet deep, which are connected by drives 40 and 30 feet long. A crushing of 38 tons from this lease gave 1 oz. 7 dwts. per ton, besides 8 ozs. dollied from the same parcel of stone.

Nos. 1 and 2 East are engaged in prospecting.

The cost of sinking on the Rose and Thistle line is rather expensive, the average being about £4 per foot.

The Prince Edward.—The prospectors on this line are Messrs. Webeck and party, who are working a 5-acre lease. At a depth of 60 feet the reef in the prospecting shaft is 2 feet

wide. Another shaft has been sunk 40 feet, and these two are connected by a drive of 30 feet. There has been no crushing from this mine as yet, but the proprietors are satisfied with the prospects of their mine. There are two more leases applied for on this line, but no labour is employed on them.

The Bengal Tiger.—This claim has been at work two years, and is the property of Messrs. Hall and party, who have done a good deal of work on it sinking and driving. A main shaft has been sunk 60 feet, and a tunnel driven 100 feet at the 40-foot level, besides other dead work. The bearing of the reef is north 16 degrees east, south 16 degrees west, and its width about a foot at the bottom of the shaft, and apparently widening. Sixty tons of quartz have been crushed from this mine, the yield of which is given as 45 ozs. 11 dwts. This company are now raising quartz which they consider payable. And the next crushing will probably determine the value of the mine.

The Lady Matilda.—The Lady Matilda prospecting lease is the property of Messrs. C. Wing and party. This reef is an east and west one, and varies in size from 1 inch to 2 feet. A good deal of work in sinking, driving, and tunnelling, has been done on this reef, and a considerable amount of money has been expended in connection with this lease in cutting roads, &c. The quantity of quartz crushed from it is 73 tons, which yielded 95 ozs.

Buckley's Reef.—This mining property would more properly come under the head of alluvial than quartz. The surface is composed of rubble, quartz, and gravel, which contains a considerable quantity of gold.

Concerning Muller's Reef I have not been able to obtain any particulars.

The principal reefs on the Left-hand Branch are the—

Lady Belmore	The Melbourne
The Centennial	The Mechanics
The Lord of the Hills	The Prince Charlie
The Town and Country	The Homeward Bound
The Hidden Treasure	The Morning Star
The Star of the South	The Lady Lizzie
The Mountain Maid	The Rosetta
The Rainbow	

The Lady Belmore.—The prospectors on this line are Messrs. Peard and Anderson, who have been working their lease of 3 acres since 1877. The reef is on an average from 6 inches to 1 foot wide, and is worked by tunnels; one has been driven 200 feet, and another at a lower level 85 feet. The cost of these tunnels has been about £2 per foot. Messrs. Peard and Anderson have had these crushings from their mine—

27 tons = 98 ounces.	53 tons = 153 ounces.
56 „ = 107 „	91 „ = 171 „
106 „ = 363 „	29 „ = 68 „

362 tons of quartz yielded 960 ozs. To this may be added about 20 ozs. dollied from the stone before it was crushed. The time taken in raising the quartz was from January, 1878, to November, 1879. In Messrs. Pearl and Anderson's lease the gold is regularly diffused through the reef, and the walls of it are well defined. The bearing is east and west, and the dip to the west.

The other leases working on this line are No. 1 East, Messrs. Henry and party, and Nos. 1 and 2 West. In No. 1 East a shaft has been sunk 46 feet, a tunnel has been driven 200 feet, and about 100 feet of cross-cuts have been put in. The yield from this mine has been good, averaging about 3 ozs. per ton, but I am not able to give the quantity of stone crushed.

In No. 1 West a party of tributors are now working. The original shareholders crushed from this lease 150 tons for a yield of about 3 ozs. per ton.

In No. 2 West a tunnel has been driven a considerable distance, but as yet without important results. The Lady Belmore line of reef has been traced about 650 feet, and appears to junction with the Centennial.

The Centennial.—The prospectors of this line are Messrs. Towns and party, who discovered it about three years ago. The prospectors' claim is now in the hands of Messrs. Tassall

and party. Four shafts have been sunk to the depths of 35, 40, 80, and 135 feet respectively, and two of these are connected by a drive of 100 feet in length at the 80-foot level. The reef averages about 18 inches in width. Three crushings have given the following returns, 146 tons = 273 x 60 + ozs. dollied = 333 ozs. This crushing was got out by two men in six months. The next crushing of 282 tons only gave 243 ozs., which was not payable. The next of 27 tons was payable, yielding 88½ ozs. The cost of sinking in this mine is at most £3 per foot. The bearing of the reef is north and south, and it underlays 1 in 2. In No. 1 South, Driscoll and party, 58 tons gave 1 oz. to the ton, 10 tons gave 20 ozs., besides 25 ozs. dollied from the heap before crushing. These returns are from the surface, the deepest shaft being only 30 feet.

No. 2 South is a 3-acre lease, the property of Messrs. Lukey and party. 160 tons from this mine averaged 3 ozs. per ton. The reef is smaller but easier to work than in the prospecting claim. This lease has been constantly at work for two years, and the mine has been proved to a depth of 90 feet.

There are some ten or eleven leases on the Centennial line, and the vein has been traced for upwards of a mile.

The Star of the South.—The prospectors of this line are Messrs. Hindmarsh and party, who discovered it in the latter part of 1878. They now hold a 4-acre lease, on which they have sunk two shafts of 60 feet each. The bearing of this reef is east and west, with an underlay of 1 in 10. The yield per ton has been about 2 ozs. Sinking is expensive, costing about £4 per foot.

The adjoining lease of four acres is the property of Messrs. Saxby and party. It has been working about fifteen months, and may be considered payable. They have had two crushings of 44 tons, which averaged 22 dwts. per ton. This ground is much more easily worked than the prospectors', sinking only costing about £2 per foot. The average width of the reef is 9 or 10 inches. The Messrs. Saxby and party have sunk a shaft on this lease between 60 and 70 feet, and have put in about 50 feet of drives and stopes.

The next lease working on the Star of the South line is a 3-acre lease belonging to Messrs. Armstrong and Kelly, who have sunk 40 feet and driven 50. The average size of the vein in this mine is 10 inches.

There are about twenty leases applied for on this reef, but only those I have mentioned are working. The reef has been traced about 200 yards.

The Hidden Treasure.—This reef was discovered about two years ago by Messrs. Cameron and party, who took up a 6-acre lease on it. On the surface the reef is a little over 2-feet in width, and it kept this size to a depth of 60 feet. A great deal of work has been done on this lease, and the yields have been as follows :—

112 tons gave	284 ozs.	14 dwts.	9 grs.;
54 "	74	6	3
112 "	286	12	6
81 "	296	3	2
36 "	172	14	5

The proprietors of this lease have tested their mine to a depth of 200 feet. They have found the reef—not at all expensive to work, sinking costing about £2 per foot. The bearing is nearly north and south, and the reef is well defined within walls of blue slate.

There are six leases at work on the Hidden Treasure mine.

No. 1 North is a 2-acre lease, the property of a Sydney Company, Messrs. Bensusan and others. There are three parallel reefs running through this lease, on one of which the company have sunk a shaft 45 feet. The vein in the bottom of the shaft is very wide, over 8 feet, showing traces of gold. On another reef, supposed to be the Centennial, a shaft following the underlay has been sunk 105 feet. Very little quartz was found until a depth of 100 feet was reached, when veins formed on the foot and hanging walls, one of these is as much as 15 inches wide; in another payable gold was struck. The vein is but 4 inches wide, but judging by the walls, which are very wide apart, it will make. The cost of sinking in this lease is £2 8s. 0d. per foot.

No. 2 North, Messrs. Goundry and party, have crushed about 22 tons, which gave a little over 2 ozs. per ton. This may be considered a payable claim.

No. 3 North have been at work about two years, but have as yet nothing payable.

No. 4 North I have not been able to obtain any information about.

No. 5 North belongs to Messrs Phillips and party, who have had one payable crushing, and are now engaged in getting out another. The lessees have sunk a shaft on the reef, which is 5 feet wide from wall to wall, but has only about 18 inches of solid stone. The yield from this claim has been $1\frac{1}{2}$ oz. per ton for 12 tons.

There is yet another lease at work on the Hidden Treasure line. No. 1 south, Messrs. Saxby and party, who are driving a tunnel to cut the reef at a depth of 30 feet; they then intend to follow it along until they reach the boundary of the prospectors, which will give them a level of about 130 feet. There has been no crushing as yet from this lease.

The Mountain Maid.—This reef is the most notable one in the district, and the Barrington Gold-fields were first brought into prominent notice on account of the high returns from it, which will bear favourable comparison with any in New South Wales or Victoria. The Mountain Maid Reef was discovered by Messrs. Charles Doust, W. H. Gill, and James Irwin, in October, 1876. The holding at this time was a block claim, and Charles Doust abandoned his share. Messrs. Gill and Irwin continued to work the reef; and the first crushing in August, 1878, was a parcel of 82 tons, which yielded 15 ozs. 14 dwts. per ton, besides which five or six pounds weight of gold were dollied from the stone before it went through the mill. The block claim was changed to a lease on the 6th of February, 1877. The Mountain Maid Reef at a depth of 25 feet was about 1 foot wide, down to a depth of 67 feet; it averages 10 inches, or perhaps rather more, in width. At this depth 153 tons of quartz were crushed, which gave 15 ozs. per ton. The bearing of the reef is E.N.E. by W.S.W., and its underlay slightly to the south. The cost of sinking is about £3 per foot. There are about twenty-two men employed in the mine, and the greatest depth attained at this date is 180 feet. The whole returns from this rich mine up to this date are as follows:—

August, 1878	82 tons yielded	1,287 ounces.
December, 1878	153 " "	2,295 "
March, 1879	325 " "	1,970 "
Seconds,	67 " "	69 "
August, 1879	298 " "	1,043 "
<hr/>		
	925 " "	7,664 "
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that is an average of 8 ozs. $5\frac{1}{2}$ dwts. per ton for 925 tons.

No. 1 East is a 5-acre lease, the property of Messrs. Murphy and Bailey, of Sydney, in which a tunnel has been driven along the vein 210 feet. The stopes show what the manager considers payable gold, 22 feet in height by 110 feet in length, which is a large body of stone. This company started to work in June last, and their first crushing of 22 tons was treated in the following October, giving a return of a little under 3 ounces. The reef varies a good deal in size, being from 1 to 16 inches wide. The greatest depth in the tunnel is 80 feet, and there is about 40 tons of quartz at grass. The expenses of carting the stone from the Mountain Maid Reef to the battery are very heavy—the road is bad and the distance to be traversed over a mile; were it not for these drawbacks these reefs would be much more remunerative. In No. 1 West, a 3-acre lease, the property of Messrs. Moses and Neems, a shaft has been sunk 100 feet, and a tunnel driven the same distance, working three shifts to strike the reef at a lower level, viz., 170 feet. This lease and that of Messrs. Bailey & Company should be valuable properties, if the reef proves as rich in them as in the prospectors lease. It seems probable that the Mountain Maid and the Rainbow line are the same, but at the present time the latter is idle. When the reefs were first discovered in this locality several crushings were taken out from the Rainbow line of reef and proved very remunerative. The Rainbow Reef is from 6 to 12 inches wide, and has yielded as much as 5 and 6 ozs. to the ton. This line is idle because the reef is in the bed of the creek, and nothing but very powerful machinery would overcome the water. The reef has been traced over 100 yards, and its bearing is N.E. by S.W. Sluicing is expensive, costing

about £3 per foot. As I have stated in another part of this report, this was the first reef discovered on this field, the prospectors were Messrs. Baker, Tassall, and Beresford, and the discovery was made in 1876.

The Lady Lizzie.—This line of reef is situated north of the Mountain Maid, parallel to it, and about 50 yards from it. A 2-acre lease belonging to Messrs. Langland and Co. is the only one working on the line, but there are five others applied for. The reef in Messrs. Langland and Watson's lease is about 8 inches wide. Not much work has been done, but I am informed that this party are on payable stone; the reef has been traced for a considerable distance.

The Morning Star.—A good deal of work has been done on this line, but at the present time it is idle, except in Messrs. Kennedy and party's lease. The most work has been done in a 5-acre lease belonging to Messrs. Fallon & Co., in which four shafts have been sunk averaging 45 feet. This has been a payable claim, and probably will be again. What is required is a tunnel to drain the mine. Sinking costs £1 or less per foot. The reef averages in width from a foot to 18 inches, and its bearing is N.N.W. and S.S.E. There are eight or nine leases on this line, and it has been traced about 400 yards.

The Melbourne.—The only lease at work on this line is the prospectors' 3 acres; although a considerable number of leases have been applied for on it. Messrs. Reid and party, the prospectors, have been at work since September, 1879, and have sunk two shafts 60 and 40 feet respectively. The reef varies in width from 1 foot to 5 or 6 inches. Messrs. Reid and party have had three small crushings, amounting in all to 45 tons, which yielded 4 ounces on an average to the ton. The Melbourne Reef is very near the battery, which is a great advantage, and sinking is cheap, no powder being required.

The Mechanics.—The prospectors on this line are Messrs. Rowe and Baxter, whose 2-acre lease, and another 2 acres, called the Caledonian, are the only mines at work. The first crushing from the prospecting lease of 9½ tons yielded 5 ounces to the ton; the next went a little over 2 ozs. This may be considered a payable mine.

The Caledonian Company have had several crushings. One of 130 tons gave 308 ozs.; a second crushing, of 129 tons, taken from the 30 to the 80 foot level, yielded 479 ozs.; the last crushing, from the 80 to the 135 feet level, gave 297½ ozs. The Mechanics Reef averages over 20 inches in width. The Caledonian Company and the prospectors are now engaged in driving a tunnel to cut the reef at a depth of 200 feet in the Caledonian, and over 300 in the Prospectors. This tunnel will effectually drain both mines, and it is expected that the work will be completed in about four months from the present time.

The Prince Charlie.—This is considered a very valuable mining property, and I think justly so, as the stone is more than payable. The reef is large, well defined, and presents the appearance of being permanent. The prospectors' lease was applied for on the 28th of June, 1878, and has an area of rather more than 2 acres. The reef on the surface was nearly 2 feet wide, and consisted of decomposed quartz, from which very good prospects were obtained. At the 60-foot level the reef thickened from 2 to 4 feet. A crushing of 190 tons surface quartz yielded 270 ozs. retorted gold. The Prince Charlie Reef is nearly vertical, underlying slightly to the south. The bearing is N.N.E. and S.S.W. The last crushing from the prospectors' claim—Messrs. Brockwell and party—of 142 tons, taken from the 60 to the 80 feet level, gave 325 ozs.; and this crushing was got out by six men in two months. The mine is very cheaply worked, requiring little powder.

There are two leases at work on the Prince Charlie line besides the prospectors. On the east, the Queen Elizabeth, Messrs. Watson and party; and on the west side, Jones and party. A good many leases have been taken up on the supposed line of this reef, and these will shortly have to be worked, or else abandoned.

There are good sites for machinery below the Prince Charlie Reef, either close at hand or on the Barrington River, which is only distant about 1½ mile. A good battery would be of great value in this locality, as it would crush for the Prince Charlie, the Homeward Bound, and the Mechanics, which reefs are all close together.

The Homeward Bound.—Six leases have been applied for on this line, which it was thought would junction with the Prince Charlie, but it has now been established, I am informed,

beyond all doubt to be a separate vein. The only leases working on the Homeward Bound are M'Nicol and party, Fallon and party, and the prospectors—Thomas, Jones, and party. The expenses of carting and crushing are a severe drag on the successful developement of these mines. The Homeward Bound Reef will, I am informed, average 18 inches in width, and has yielded from 14 dwts. to 2 ozs. per ton.

The Rosetta.—The prospectors' lease is 4 acres, belonging to Messrs. Easton & Bell, who have sunk 60 feet and driven 40. The reef is about 18 inches wide, and the bearing east and west. The prospectors have had two crushings, averaging a little over an ounce per ton for 55 tons, which is payable. The reef has been traced 300 yards, and a good many leases have been applied for on the supposed line.

The Bowman.

The Bowman Reefs are north-west of this place, and about 5 or 6 miles distant. The principal are called the Queen of Beauty, the Mint, the Birthday, the Bank, the Christmas Box, the Germania, the Gladstone, the Golden Spur, and the John Bright.

Concerning the first mentioned of these there is little to report. The reef varies in size from 8 inches to 4 feet. The prospectors, Messrs. Tutor and party, are now driving a tunnel at the 70-foot level, in very hard country. There has been no crushing from this line as yet, from want of machinery. Several leases have been applied for, but only the prospectors are working.

About 400 yards north of the Queen of Beauty is the reef called the Mint, discovered by Messrs. Chalmers & Sala. This is an east and west reef, and its width varies from 15 inches to 4 feet. The prospectors have about 100 tons of quartz at grass, which is estimated to yield 2½ ozs. to the ton. They have driven a tunnel 150 feet along the reef, to cut it at a depth of 270 feet. The cost of sinking on this lease is not more than 15s. per foot, and of driving £1. There are, besides the prospectors' lease, three 5-acres on the Mint, but none of them are working.

The reef called the Birthday is about 600 yards above the Mint, on the same spur. On this line there was a good surface show, and the prospectors, Messrs. Johnson and party, are driving a tunnel to cut the reef at a depth of 100 feet. This is the only lease at work on this line, but there are several applied for.

The Golden Spur was discovered in September, 1878, by Messrs. Williams, Dyson, and party. There are six 3-acre leases taken up on this line, and but two of them have been worked. In the prospectors' lease the reef was 20 inches wide on the surface, and has kept this width to a depth of 125 feet. The bearing is N.N.E. and S.S.W.; the cost of sinking about £2 per foot. From this mine 107 tons yielded 155 ozs. The reef appears to be a permanent one, and has been traced about 160 yards. The prospectors' lease is considered by miners to be a good wages claim.

Another lease is working on the Golden Spur line, called the Old Lampton Company, who have recently got payable gold at a depth of 105 feet.

The Christmas Box is about 500 yards west of the Golden Spur. The prospectors, Messrs. Hughes and Proctor, discovered this reef in December, 1878. They have sunk several shafts on their 3-acre lease, and have had one small crushing of 18 tons, which yielded 1 oz. to the ton. This is payable. The reef averages about 1 foot in width. Messrs. Hughes and party are at present engaged in sinking to cut the reef at a lower level, where they expect to get richer stone.

The John Bright.

On this reef no work is at the present time being carried on. The prospectors found some rich specimens on the surface, so rich that 27 ozs. of gold were dollied from 52 ozs. of stone. This party sunk two shallow shafts on the line, but were not satisfied with the prospects, and work was discontinued.

The Gladstone is parallel to the last-mentioned reef, and to the east of it. This reef is a large one, averaging 2 feet 6 inches wide. It was discovered by Messrs. Hughes and Griffiths in August, 1878. Besides the prospectors' lease of 3 acres there are two others at work, but as yet none of them are payable. This reef has been traced 200 yards.

The Cobark.

The Cobark leases are situated on both sides of Hole Creek, a branch of the Cobark or Arundel River, about a mile above the junction and some 18 miles west of Copeland. There are thirty-five leases taken up at the Cobark, twenty-six of which are together on the north side of the creek. The remaining nine are on the south side, and scattered. Thirteen lines of reef have been discovered in this locality, and most of them are large, one being 7 feet wide and the others averaging 2 and 3 feet. The character of the stone is poor, the yield being estimated at from 1 to 2 ozs. to the ton. This, however, should pay well with proper and sufficient machinery. Three prospecting leases are at work, viz., the Golden Wall, the Bonanza, and the Capulet. Two others, the Mountain Hero and the Golden Hero, have been worked, but are at present idle. The whole of this Cobark district is very mountainous, consisting of series of ranges covered with dense brush. It is a very large tract of country, almost unknown, as the difficulties of procuring provisions and of travelling has prevented prospecting beyond the mere outskirts of the mountains. A battery to be worked by water-power is shortly to be erected at the Cobark, and the shareholders in the various reefs are sanguine that the reefs will prove payable. There are at this date ten miners at work on the Cobark.

Rawdon Vale.

The leases on the Kerripit or Rawdon Vale are situated principally on a gully running down from the range dividing the Barrington River from the Rawdon stream. They are distant about 4 miles from Rawdon Vale Post Office, up the stream, which latter place is 9 miles west of Copeland. Like the Cobark, but little of this country has been prospected, the locality called Golden Gully being the only place to which much attention has been directed. Here twenty leases have been applied for, but only three of them have any labour employed. The lease known as M'Vicars and Cramb's has several promising veins running through it. On one of them a shaft has been sunk 70 feet; the vein is from 8 inches to 1 foot wide, and shows gold, apparently payable, all the way down. I am informed that shares have been sold in this lease to Messrs. Cope and others, of Sydney, who are prepared to erect the necessary machinery, to be worked by water-power, with as little delay as possible.

In Messrs. W. A. Smith and Co.'s lease I am informed that the prospects are good, but I have not been furnished with particulars.

During the last two years rich specimens have been found in various parts of Golden Gully, and the miners appear generally to have formed a favourable opinion of the reefs in this locality.

Burneal Creek.

These reefs are situated on a small creek running into the Barrington River on its northern side, and about 6 miles above the junction of the Cobark and Barrington. The country is exceedingly rough, the ranges being precipitous and broken. Five leases on the same line of reef have been taken up. In the prospecting lease a tunnel has been driven 110 feet into the hill. The reef is from 6 to 8 inches wide, and shows gold freely throughout. The owners are waiting for the erection of machinery at the Cobark, which is $4\frac{1}{2}$ miles distant. The expense of carriage for this distance will be heavy, and the reef will require to be very good to pay. No labour has been employed on the other leases in this locality.

The Little River.

Little River is a tributary of the Chichester, and the place where reefs have been discovered is about 6 miles from the junction of the Little River with the Chichester. The nearest town is the Dungog, which lies to the south, and is about 20 miles from the diggings in question. Three lines of reef have been discovered at the Little River, viz., the Golden Spur, the Hidden Treasure, and the Golden Streak. On the Golden Spur five claims are working, covering a distance on the line of reef of about 600 yards. The vein is from 9 inches to 2 feet wide, in blue slate, and the bearing east-by-west. Messrs. Murphy and Gillies are the prospectors, who have done a good deal of work and have payable stone.

The adjoining claim to the prospectors' is the property of Messrs. Quinn and party, who have sunk a shaft 90 feet, and report the stone as rich; the vein is about 8 inches wide, and some rich specimens have been obtained from it, one pound and a half of stone yielding 8 ounces of gold. This party have at this date 20 tons of stone at grass, showing gold freely. The adjoining claim to Messrs. Quinn and party have sunk 70 feet, and the reef, which they cut at 12 feet, averages about 18 inches. This party have raised about 40 tons, estimated to yield 1 ounce per ton. Another claim is working on this line, but they have not yet cut the reef. The expense of working is light, sinking costing only about ten shillings per foot.

The Hidden Treasure.

On the Hidden Treasure only one claim is at work, and this is an ordinary claim of five men's ground. The reef is from 1 to 2 feet wide, and has been traced a considerable distance. The prospectors, Messrs. Buck and party, have driven a tunnel 90 feet and sunk two shafts 34 and 45 feet respectively. They had 30 tons of quartz at grass, which is estimated to yield about 2 ozs. per ton.

The Golden Streak.

On the Golden Streak little work has been done on account of the water, which is very strong.

At the Little River about twenty miners are employed, and they are very confident that the reefs are payable, if not rich. The great drawback is the want of machinery. A large battery worked by water-power, which is easily obtained, is wanted. I am informed that arrangements have been made to have a pneumatic battery of two stampers erected, but, except perhaps for prospecting, I fear this will be of little service.

Cherry-tree Hill.

These reefs are situated 5 miles east of Dungog, on the main road to Stroud. The only particulars I can give are these: there are three lines of reefs, varying in size from 6 to 18 inches; of these the bearing of two is north and south, of one east and west. An area of 16 acres is under application to lease, and the reefs have been traced on the surface for a considerable distance. The deepest shaft is 70 feet, and as yet payable gold has not been struck. The discovery of payable gold in the vicinity of Dungog would be of great benefit to the place, and I am glad to learn that some of the business people are backing the miners in prospecting.

As regards the character and what may be expected from the reefs in this district, Mr. Wilkinson, the Geological Surveyor, thus describes them. "As a rule the lines of reef follow the strike of the strata, but there are one or two exceptions, as in the Morning Star line, where their course is almost in the direction of the dip of the strata. Consequently we find reefs running towards various points of the compass. This may be partly due to the fact that the strata—Upper Devonian—which these reefs traverse has not been affected by cleavage, as have the older silurian formations, which are the principal reef-bearing rocks on some of our gold-fields. The fissures, which the quartz has filled, opened where the strata offered least resistance to the contracting or other forces causing the fractures; and as the strata of shales, sandstone, and conglomerates vary considerably in composition and hardness, and in the direction of their dip, there is little difficulty in accounting for the irregular reefs formed in them. Under these circumstances we find, as might be expected, sets of reefs extending perhaps in one general line, but each reef of irregular thickness and length, just as we see in the splitting of cross-grained timber, which does not split in one straight line, but opens in small cracks along the main line of fracture. These considerations are of importance to the miners, as showing that the thickness of the reefs cannot be relied on for continuance in either length or depth, and some reefs may even cut out altogether, but will probably be connected by distant joints with other similar veins not far off; and thus we may be assured that though the yield from individual mines will fluctuate considerably at times, yet on the whole the quartz-mining industry on this gold-field may be regarded as of a permanent character. Much will depend upon the systematic development of such reefs. Their variable thickness and extent suggest the

precaution of providing in many instances, a reserve fund for occasional prospecting and the advantage of the management of the mining operations being under interested and local direction. These and other considerations should not be disregarded, for by the mismanagement either of a company's mine or its funds a good mine may be brought to a standstill, many incautious investors ruined, and the development of the mining industry retarded."

The first portion of Mr. Wilkinson's remarks have been verified by experience, and the latter part will I hope be borne in mind and acted upon by miners and those interested in the Barrington mines.

I would here refer to a practice which obtains here, and which will probably lead to grave complications hereafter. Persons are desirous of speculating in mines for which the lease has not been granted, and for which in many instances the application has not even been approved. An irregular transfer, or rather promise to transfer, when the lease is issued is given by the seller and accepted by the intending purchaser, the purchase money is paid, and this for a lease which possibly may never be issued. As the land may not be available, and which perhaps has been sold over and over again, or the transferee, even if the lease is granted, may refuse or neglect to transfer, and thus cause endless trouble and expense. This is a difficulty which seems hard to get over, and one which cannot exist where the land is held under the miner's right. I am glad to say that the difficulties of transfer will not exist here much longer, as all, or nearly all, the instructions for the survey of leases in this mining district have been carried out, and the applications to lease can now be speedily dealt with. A great drawback to the prosperity of this field is that the reefs in most instances are so situated that there is great difficulty in getting the quartz to the crushing machines—roads have to be cut in almost inaccessible places, and the stone brought long distances to the battery in sledges and drays. Carriage is very high, on account of the scarcity of grass and cost of forage, and the cost of crushing is £1 per ton, hence it follows that only reefs from which the returns are far more than payable can be worked. I think a system of tramways might be devised, and not at a very great cost, which could be connected in such a way that mines in the same locality could all send their stone by these means to the mill. Doubtless these wooden tramways would have been adopted before this at some of the mines but for want of capital. This gold-field is very badly provided with quartz crushing machinery; there are but three batteries to crush for all the reefs on the Right and Left Hand Branches and at the Bowman. These batteries are—one at the Rainbow, ten stampers, belonging to Messrs. Driscoll and Watt, another near the Centennial, ten stampers, belonging to Messrs. Burley and Thomas; and a third, also ten stamps, on the Right Hand Branch, the property of Mr. Robert Campbell, of West Maitland. I have omitted to mention a battery at the Bowman which at the present time is out of order and idle. The miners complain bitterly of the expense of crushing on this field, and also of the capabilities of the various machinery, alleging that a large proportion of the gold is lost. However this may be, there is doubtless plenty of room for improvement, and a large crushing machine, with proper appliances for saving the gold and treating the tailings, would be well patronized, and would be of incalculable service in assisting the development of the mining resources of this locality. As regards water for crushing purposes, there would appear to be no difficulty; the gorges are steep and narrow, and a vast quantity of water rushes down the creeks and gullies every thunderstorm and shower, and suitable places for dams and reservoirs are not difficult to find. It might happen that the bed rock is often jointed, but this hindrance could be got over if a proper site was chosen, and by puddling so that the filtration would be stopped. It is probable that a battery will be erected on the Barrington River, to be worked by water-power, of which there is abundance, if the Prince Charlie, the Mechanics, and other valuable reefs, which are on the western slope of that river, from which they are distant about a mile and a half, continue to hold out the prospects they have at the present time.

Reefs have been discovered on the Barrington River, and across to the Gloucester, but they are not at present working, as the prospects were not sufficiently encouraging to induce the prospectors to do more than sink a few shafts to "shallow depths," and make a few trenches.

This gold-field has an advantage over most others in this Colony, in that there is a considerable amount of country near it suitable for farming purposes, for vineyards, &c. This land is part of the Church and School Estate, and is situated on or near the Barrington River,

which is about 5 miles from Copeland, on this river. A few farmers, some eighteen or twenty in number, are occupying under leasehold farms varying in size from 20 to 40 or 50 acres. Their market is Copeland, but before the diggings broke out they had to carry their produce to Stroud, a distance of 42 miles. Some time back about seventy farms on the river were measured for sale, but were not sold—I presume for fear that they might contain auriferous or mineral deposits. Some few of them, high up the river, might contain reefs, but it is very doubtful. The greater part, and I hope the best for agricultural purposes, might be leased for long terms or sold without risk of injuring the mining industry. I am sure these farms would be readily taken up, and as the soil is very rich and the water abundant and good, they would support comfortably a considerable number of farmers. I have no hesitation in saying that the leasing for long terms or the sale of this land would be the means of settling a very considerable population in this neighbourhood, and I would submit that the sale or leasing at an early date would be a great benefit to this district.

In conclusion, I think that there can be little doubt as to the permanent character of the gold-fields in this district. Their extent is now very large, and is increasing as new discoveries of reefs are continually being reported. There are at the present time between twenty and thirty payable claims and leases in and about Copeland. It is probable that it will take a considerable time to develop the reef, but as the present mining properties in work are proved payable, and in some instances rich, and other valuable discoveries are made, no doubt the capital which is required will flow in, and mining men with experience (which is much wanted here) will be glad to turn their attention to a new field which offers chances and prospects that the older gold-fields of this and the neighbouring colonies cannot hold out. It is much to be regretted that so much auriferous land is held under lease, or rather under application to lease, unworked; but this evil will to some extent be lessened when the documents of lease are issued, as they will be doubtless very shortly. Then labour must be employed or the lease cancelled. I feel sure that as this field shows its value the reefs will be largely sought for and worked, and the competition that will ensue will prevent at any rate a large quantity of the land from lying idle. Even now where there is anything like a "show," as the miners call favourable prospects on a reef the necessary labour is employed, and it is only where the land is remote from gold producing tenements that it is allowed to lie idle. It must be admitted however that the present leasing system is a great drawback to the prosperity of the field, and that if the reefs were held under the miner's right the mining population would be very much larger than it is, and consequently the mining industry in a much more prosperous state. A miner, that is any person holding a miner's right, can hold under application as many interests as he pleases under the leasing regulations without employing labour for a long period, and this is an advantage that he is fully sensible of. While under his miner's right he must represent within a few days every interest he has. Therefore, although there is a great outcry among men interested in mining against leasing of auriferous tracts, that the lands are locked up, I very much doubt if a majority would like to see the present system done away with, and I have found in many instances that the men who have taken a leading part in signing and presenting petitions to the Government praying that the labour conditions on leases may be enforced are men who hold leases without employing the necessary labour. In the Dungog Division of this gold-field and in this division there are only about a dozen quartz claims registered, against 531 lease applications. Up to the end of last year 945 miners' rights were issued; in January last 389, and in the January previous 550.

I annex a return of the gold won on this field during the past year, which is as accurate as I can make it from the information I have been able to obtain. I cannot separate the alluvial gold from the quartz, but I am certain that very little of the former is now being found here; and I believe, from inquiries I have made, that not more than from 1,000 to 1,600 ounces of alluvial gold have been won on this field altogether. There were some claims on the Right and Left Hand Branch Creeks that paid wages for about four months, and a few that for a short time yielded £7 or £8 a week per man.

I do not think it is at all likely that alluvial gold will be found in any considerable quantity in this district, as the reefs do not, as a rule, show on the surface; but it is probable that the gullies and creeks will supply some rich patches, as in the case of the Right and Left Hand Branches.

Return of gold won on the Barrington Gold-fields during the year 1879 :—

			ozs.	dwt.	grs.
Quarters—January to March	...	...	2,962	3	8
April to June	...	...	1,963	0	15
July to September	...	...	1,710	16	5
October to December	...	...	1,667	13	8
By private escort	...	...	1,712	0	0
Total	...	...	10,015	13	12

NOTE.—The above is a return of gold purchased or otherwise passed through the Commercial and Australian Joint Stock Banks during the year 1879, and the amount sent by private escort.

HUNTER AND MACLEAY DISTRICT—COPELAND DIVISION.

(James Baker, Mining Registrar.)

MR. WARDEN SHARPE has furnished an exhaustive and elaborate report upon the state and progress of mining in this district. My report therefore will be very short, as it would be useless, besides being a waste of time and space, to re-state what that gentleman has so ably advanced.

During the month of December, 1879, I sent out circulars to the representatives of some eighty mines, and have received replies from nineteen only. I cannot therefore give more than approximate numbers of population, miners, yields, &c.

Population.—I estimate the population of this division at from 1,000 to 1,200 souls, and that there are about 600 professed miners, of which not more than twenty were at the close of the year engaged in alluvial mining, the rest were nominally quartz-miners.

There are no Chinese, mining or otherwise, in this division.

From general observation there would appear to have been a considerable decrease in the population during the last few months of 1879, and this view is supported by a comparison of the miners' rights issued in January, 1879, with those issued in January, 1880; in the former month 550 were issued, against 386 in January of this year, being a decrease of 114. At the present time the population appears to be fairly settled—that is for a gold-field population—and on the increase rather than otherwise.

During 1879 there were issued from this office 945 miners' rights and seventy-six business licenses, of which latter twenty-six were for twelve months and fifty for six months.

Yield of Gold

During the year the two Banks here forwarded to Sydney 10,015 ozs. 13 dwts. 12 grs. of gold, which, at the average value set upon it by the bankers here—viz., seventy shillings per ounce—would give the aggregate value of £35,056 7s. 3d. for the year. Probably some small parcels left the field without passing through the Banks, but of this I have no means of knowing.

Machinery.

The value of mining machinery and mining implements in this district may be estimated at from £8,000 to £10,000. In no case is steam applied as a motive-power for winding purposes, the windlass being generally used. There are two horse-whims, one of which is idle. There are four quartz crushing machines in this division, each driven by a steam-engine of 10 horse-power, and each having 10 heads of stamps. These machines are situated as follows :—

Messrs. Burley & Thomas's, Left Hand Branch,	} Copeland.
Messrs. Driscoll's, " " "	
Mr. R. Campbell's, Right Hand Branch,	
Messrs. Vivian & Pender, Bowman's River.	

The lastnamed machine was completed just before the close of 1879, and I regret to say is now out of repair and idle, having broken its spur wheel. These crushing plants, although boons as far as they go, are far below the requirements of this important division, both in quantity and quality.

I do not think that, all told, the aggregate of all their crushings would average for the year anything like 150 tons per week. There is no machinery or appliances of any kind for the treatment of pyrites or for utilizing "waste."

Our auriferous deposits.

There are said to be fifty-one distinct auriferous quartz lodes in this division, situated as follows:—

Right Hand Branch	...	...	...	...	...	...	8
Left Hand Branch	...	...	...	...	...	...	16
Bowman River...	...	...	...	...	...	...	10
Cobark ...	...	...	...	...	...	...	14
Kerripit...	...	...	...	...	...	...	3

—
51

It is however possible, indeed I think it very probable, that further working will show that these are not all distinct lodes. They appear to be so at present. How many of these are payable I cannot of course say; it is thought, however, that under a system of economical mining and crushing at least a fair proportion of them would pay. Even under our present wasteful and expensive arrangements some thirty mines have been proved to be payable, and some of them exceedingly rich.

The topographical conformation of the country precludes the probability of anything like extensive alluvial deposits being found here. Small patches of alluvium have been found containing gold; some have been rich, but none of them extensive.

Mining.

This division is remarkable for its high, precipitous mountains, and deep, narrow gullies. For the most part the quartz lodes that have been discovered here were found high up the ranges. Being thus situated the advantage of exploring them by means of tunnels instead of by shafts is obvious, and it is a matter for regret that miners do not as a rule take the advantage thus offered, but persist in sinking shafts instead of driving tunnels. No doubt but that prudence suggests the advisability of sinking on the lode sufficiently to test its value and permanence before starting an expensive tunnel, but being satisfied on these points prudence ought also to suggest the construction of a tunnel for systematic and economical working. Mines are flooded again and again, and miners spend weeks and months in baling out water without being able to overcome it until dry weather comes to their aid, whereas they could by means of tunnels drain their mines without any labour at all for many hundred feet below their present workings. Indeed the water, instead of being an embarrassment, would be of advantage to them by being conducted into dams for quartz-crushing purposes. Where tunnels are practicable they have so many advantages over shafts, and these advantages are so obvious to practical men, as to render it unnecessary for me to do more than direct attention to the subject.

Mining depression.

For several months past this division has been in a very depressed state, and I regret to say that I do not see much hope for improvement at present. As far as one may judge, Copeland, as a gold-producing district, has a fairly prosperous future before it; but its growth and development must almost of necessity be gradual and slow. This is so with nearly all quartz-reefing districts, and especially so in mountainous country like this. We have unquestionably rich auriferous deposits here, but in order to unearth them with commercial advantage we need amended laws, more machinery and of better quality, more well directed enterprise, more capital, and last (not least) more skilled quartz-miners. The want of these is the cause of our depression. It is however satisfactory to know that they are causes which can be removed.

Suggestions.

To the miners I would respectfully suggest the advisability of getting their own machines. The cost of carting and crushing quartz is a serious drawback to the prosperity of this division.

The general price for crushing is £1 sterling per ton, the exception being at the Prince Edward machine (Campbell's), where the price is 15s. per ton; add to these costs the price of carriage, the average of which would be from 8s. to 10s. per ton, and these charges with other incidental expenses, labour attending the machine, &c., and it will be found that after the stone is brought to the surface it takes nearly half-an-ounce of gold to pay for the cost of extracting the gold from it. If miners had their own machinery convenient to their mines, with properly constructed tramways to run the quartz direct from the mine to the machine, the cost of removing and crushing, even where steam-power would be used, should not be more than from 7s. to 10s. per ton. Under the present high charges stone already raised to the surface is not crushed unless it shows gold pretty freely. It is put aside lest the yield should not pay the costs, and mines which under economical working would pay fair profits cannot now be worked at all. It is impossible to say how great is the loss to the division consequent upon this state of things, because it is not the closing up of poorer mines merely, this very action retards the discovery of richer ones.

The mountainous nature of this division precludes the possibility of cheap carriage if quartz be carried a great distance, hence the necessity for machines to be near to the mines. I am aware that to tell miners without means that they ought to erect costly machinery looks very like mocking them. Where practicable let them combine, construct a common tunnel, a common tramway, and a common dam, and if by combination they are able to erect machinery too, let them do so, but if they are not able to erect machinery, let them offer by way of shares in their mines such liberal inducements to men of capital as would induce them to erect machinery. Suitable sites could be got almost anywhere, because by constructing dams across the creeks water could be conserved, which, supplemented with the drainage from the mines and the heavy rainfall of this district, would give, as a general rule, an abundance of water for crushing purposes, especially if the water were allowed to settle after being used and then pumped back to the dam. In most cases steam-power would be required, but not in all; for instance, there are valuable machine sites on the banks of the Barrington River, any reasonable number of machines could be driven here by water-power, and the supply is never-failing; a tramway from several leading mines to these sites could be constructed at a small expense. All over this division there is a superabundance of suitable timber for constructing tramways and for all the timber required in erecting machinery. In other districts and other colonies labour and capital have combined for the development of the mineral wealth, and have done so with beneficial results; and I think if the Copeland miners would but take this matter up in real earnest and in a business like manner they could secure like beneficial results. At any rate it is worth trying for.

HUNTER AND MACLEAY DISTRICT—DUNGOG DIVISION.

(*Charles Graham Smith, Mining Registrar.*)

I HAVE the honor to report upon the present state and the future prospects of the Dungog Division of the Gloucester Gold-mining District.

The principal work is being done at Little River, in the parish of Wangat, about 18 miles from Dungog; and although there had been prospecting for some time previously the *bona fide* working dates from about December, 1878. On what is termed the Golden Spur there are four ordinary quartz claims and two leaseholds, respectively of 3 and 5 acres.

In the prospectors' shaft the reef was found at 60 feet, 18 inches wide, carrying good gold; they are now 70 feet, the reef running east and west, underlay to the north, slaty sandstone, very easily worked.

No. 1 West.—Quinn and party struck rich vein at 30 feet, which has been followed to present depth, 90 feet from surface, improving, from $1\frac{1}{2}$ cwt of stone 8 ozs. 1 dwt. gold and 1 oz. 15 dwts. silver.

Adjoining Quinn and party on the west is Murphy and party's 3-acre lease. Not much work yet done, but now beginning in earnest, with every prospect of success, the quartz cropping out on surface being evidently same reef as in Quinn and party's ground.

West and westerly is 5-acre lease applied for by Larkom and party; one shaft 55 feet, and another commenced with intention to go deeper.

No. 1 East from Prospectors' Claim.—Robertson and party. Good payable prospects at 12 feet, now down 70 feet, reef 2 feet; prospects improving. About 30 tons at grass from the sinking; little or no powder used.

To the east is Towers and party, who struck the reef at 25 feet, with payable gold; patchy at 55 feet; improvement anticipated at 30 feet deeper.

In a north-easterly direction and parallel to the foregoing Golden Spur Reef is the Hidden Treasure—Buck and party; underlay to the north, 18 inches wide, carrying coarse gold throughout, and improving. Water has been troublesome. About 20 tons at grass, estimated to yield, at least, 6 ounces per ton.

In a northerly direction, on another ridge, is Levey and party's claim. Have been troubled by water, but are now getting good prospects and sanguine.

The gold workings at Cherry-tree Creek, on the Stroud Road, are progressing slowly, but the men are very hopeful. Two leases have been applied for; in one holding a very rich patch was found, encouraging the applicants to persevere. They (the Speculation Gold Company) are now down 60 feet; width of vein, about 1 foot. The adjoining leaseholders tunnelling to strike the reef.

The miners generally disapprove of the present leasing system, and assert that it retards the progress of a gold-field. Some machinery is about to be erected at Little River, and is now on its way to that place.

The shaft commenced on the Dungog Common (under 28th section) by Mr. Thomas M'William, in search for silver, is now 51 feet deep, and the spur seems, from his report forwarded herewith, to contain various metals. Mr. M'William continues sanguine of ultimate success.

NOTE.—When machinery has been erected and further progress has been made in the working of the mines the particulars required for filling in the various forms supplied will be obtainable, every precaution being taken that those who tender information are reliable.

To Charles Graham Smith, Esq., P.M., Mining Registrar, Dungog.

Sir,

Calton Hill, Dungog, January 8th, 1880.

In compliance with your request that I would furnish you with particulars of my mining operations in the commonage, I have the honor to place before you the following:—

Two fire assays have been made in Sydney since I last addressed you. The pyrites contain gold and silver, with every encouragement to sink, on that ground alone, as at Lucknow.

Recently, *after* one of my own experiments (by roasting and amalgamation), I have been fortunate in discovering the metal platinum.

I have also in the last 2 feet of sinking got specimens of native silver, the metal I commenced the trial for.

I am now down to 51 feet in the deepest shaft, and purpose to sink to 60 feet before driving to the other, which is 150 feet apart. The porphyritic bands against the walls, which bands inclose the spar, are changing to granitic, and with this change the marked improvement of the lode commences.

I believe the stone that from henceforth can be raised will with sorting be rich enough for shipment to England.

If the department should desire to have a sample from this mine for the purpose of analysis (which would be necessary to know the proportions of the rare metals that associate with platinum) I will with pleasure forward one.

There is extent of the lode to the north-east that is available to the public.

I have, &c.,

THOMAS M'WILLIAM.

HUNTER AND MACLEAY DISTRICT—KEMPSEY DIVISION.

(J. B. Casey, Mining Registrar.)

At Ooranguola, Upper Macleay, a number of persons holding mineral licenses are obtaining and exporting to Sydney considerable quantities of antimony. Smelting works and machinery are in the course of erection. Having no directions I have not visited the locality, but a large number of persons, and no small amount of capital, will be employed there.

HUNTER AND MACLEAY DISTRICT.

(Mr. Warden Rowling, P.M., Bullahdelah.)

Northern and Eastern portion of the Gloucester Gold-field.

I HAVE the honor to submit my annual report for the year 1879, on the portion of the Gloucester Gold-field under my charge.

At the date of my last report this field had only been called into existence six weeks, and is therefore yet in its infancy; nevertheless the past twelve months has been a period of progress. Applications have been received and approved of for 120 portions of land as gold-mining leases, comprising an area of 399 acres; and four applications for mineral leases, containing in the aggregate 100 acres. A township has been laid out on the Curreeki Creek, at Coolongolook, with suitable reserves for public purposes, and 81 allotments for building sites, 50 of which have been taken up and residences built thereon, including an hotel, a butcher's shop, and several stores. A crushing machine has been erected adjoining the township, the spirited proprietors of which certainly deserve great credit. The machinery and motive-power are good. As yet only four lots of stone have been crushed, but unfortunately, from inexperience, I believe, the gold-saving power is anything but perfect. The discrepancy between the product of this machine and the Mint tests is so considerable that for a time it has had the effect of depressing the energies of the miners. Allowing a wide margin between an ordinary machine and the Mint, and admitting that the anticipations of miners are never realized, it is not sufficient to account for the difference of the results obtained; through this the field has received its first serious check. I see no reason why this defect cannot at once be rectified, and the machine made perfect and thoroughly efficient. I have every confidence that the proprietors will strain every effort to make it so. Hope is the strongest virtue and sheet-anchor of miners, consequently their faith in the capabilities of the field is in no way shaken by this failure. The fact that payable gold is procurable from many of the reefs is incontestably proved by late Mint returns, viz.:—Of standard gold—Big Wonder, 3 ozs. 15 dwts. 18 grs to the ton; Curreeki, 6 ozs. 5 dwts. 12 grs. to the ton; Mountain Widow, 14 ozs. 8 dwts. 12 grs. to the ton.

Coolongolook.

About 20 miles N.N.E. of Bulladelah, is situated at the head of the navigable waters running into Wallis Lake, and about 15 miles by that route from the coast. The reefs running in a northerly and southerly direction are—

The Mountain Maid, on which three parties are working, viz.: Gregg and Co.—reef 9 inches, shaft 74 feet; Masters and Co.—reef 14 inches, shaft 70 feet; and Nihill and Co.—trenching.

Curreeki Reef.—Five parties are working, viz.: Blackwell and Co.—two parties trenching; Easterbrook and Co.—reef 6 inches, shaft 30 feet; Dickson and Co.—reef 6 inches, three shafts 38, 40, 50 feet; Lulham and Co.—cut reef.

Who'd-have-thought-it Reef.—Two parties are working: Alway and Co.—reef 6 inches, shaft 6 feet; and Worth and Co.—reef 9 inches, two shafts 30 feet each.

Lady Mary Reef.—No workings.

Great Wonder Reef.—Three parties working, viz.: Marshall—trenching; W. Lulham and Co.—trenching; J. Lulham and Co.—reef 5 inches, shaft 30 feet.

Little Wonder Reef.—One party working: V. Murray and Co.—reef 3 inches, shaft 30 feet.

Golden Bar Reef.—Lulham and Co. have a shaft down about 25 feet.

Mountain Widow Reef.—One party working: S. M'Kay and Co.—reef 6 inches, two shafts.

The reefs running E.N.E. and W.S.W. are—

The Suttor, upon which J. Donaldson and Co. have two parties working, both areas well trenched, and reef 18 inches, found; and Gregg and Co.—reef 3 feet, shaft 28 feet.

Golden Star Reef.—Three parties are working: C. A. J. Henry—tunnel 25 feet; V. Murray and Co.—reef 12 inches, two shafts 16 and 25 feet; S. Lean and Co.—reef 9 inches, two shafts 12 feet each.

The Rose and Thistle line of reef runs N.W. and S.E. Only Worth and Co. are working upon this line—reef 2 feet, shaft 40 feet.

A few other reefs are being worked, viz : The McElhone—Ireland & Co., reef 18 in., shaft 36 ft ; The Farnell—J. Donaldson & Co., reef 2½ feet, shaft 16 feet ; Nil Desperandum—Clayton & Co., reef 9 in., two shafts ; Queen Mary—Hoare & Co., reef 6 in., tunnel 30 ft ; Perseverance—Cannell & Co., reef 10 in., shaft 20 ft.

A very spirited exploration was made in this locality by Mr. W. Copeland, extending over a period of some months, to ascertain if gold existed in the alluvial deposit, but unfortunately without success, and further prospecting was abandoned. The workings are entirely confined to reefing operations requiring capital, therefore it cannot be said to be a poor man's field. In this place there are sixty leases applied for, about 150 men employed, and 200 tons of stone at grass.

Boolbee Mountain.

Is from 7 to 10 miles north-west of Coolongolook. There are twenty-nine applications for leases on reefs named Morning Star, Evening Star, Queen of Boolbee, Mountaineer, Lady Loftus, and Queen of the East. The mountain trends north-east and south-west, and the areas are situate along the summit of the range. Emmerson, the prospector, is carting good stone to the machine at Coolongolook, and Murray and Potts have a good sample at grass. There are about twenty-five men employed in this locality.

Paddy's Creek.

Near the Myall Lake, is situate north-east of Bulladelah, distant about 12 miles. In this locality there are twenty applications for leases on two lines of reefs running nearly parallel north-west and south-east, viz : The Rosebud, on which the prospectors, Messrs Humble and Armstrong, have a shaft 40 feet, reef 9 inches, and Holmes & Co. have tunnelled 30 feet. On the Aurora line of reef little or no work has been done ; about twenty men are here employed.

Kiwarak.

Is situate on the Manning River, from which place eleven applications for gold-mining leases have been received, principally on the Devonshire line of reef.

The mineral areas applied for are situate,—one for antimony, near Coolongolook ; two for antimony and one for silver, at Warril Creek, north of Kempsey, Macleay River.

During the year 237 miners' rights, ten business licenses, and one mineral license have been issued from this office.

BERRIMA DISTRICT.

(*F. R. Wilshire, Land Agent.*)

DURING the past year, 1879, nothing further very important has been done towards the development of the valuable iron, coal, and shale deposits of this district, and which still await the introduction of capital to speedily make the district second to none in the Colony.

Messrs. Lamb, Parbury & Co. are still pushing on to completion their splendid shale and oil works at Joadja Creek, and have already succeeded in finding a ready sale for the refined oil now manufactured by them at the Joadja works.

The oil is said to be equal, if not superior, in illuminating power, safety, &c., &c., to any other made in the Colony or imported.

The company expect in a few weeks to have their 15 miles of locomotive tramway finally connected with the Main Southern Line.

With regard to coal, no mines are yet at work, but a company is in course of formation to work the valuable seams of coal on Mr. Atkinson's land near Berrima.

The company propose to construct a locomotive tramway to near the town of Berrima, between which place and Moss Vale it is anticipated the Government will also at once construct a tramway for the benefit of these towns and districts generally, and to take up the coal for locomotive purposes.

The company, it is stated, will also be prepared to at once extend their tramway to the Great Southern Railway, should any delay take place in the anticipated construction of the Government connection.

As the coal in question is known to be of excellent quality, it is expected that its working will at once set in motion the Fitzroy Iron Works, at Nattai, followed by other like industries in other parts of the district in a very short time.

As the connection with the Main Southern Line, will be at or near the town of Moss Vale, it will thus form this place into a junction township and southern coal depot, and otherwise add to the importance and rapid progress of this township.

BURROWA DIVISION.

(*W. J. Wotten, Mining Registrar.*)

DURING the year a few prospecting claims were taken up at Kenyu, near Burrowa, and on one, the Nil Desperandum, payable gold was reported, but for the better information of the Minister I enclose a report from Mr. Brooker, who holds the claim, and he fully describes the prospects of the claim and the locality. With regard to the copper in the district, the Frogmore mines are in full working, and I enclose return furnished by Messrs. Deer Bros. for the information of the Minister.

Sir,

Frogmore, 29th December, 1879.

The circular issued by your department having reference to the metalliferous deposits of the locality in which until lately I have been engaged, viz., the Kenyu, came to hand only yesterday, otherwise would have been replied to ere this.

I am most reluctantly compelled to say that about a month since I was forced to abandon the Nil Desperandum quartz reef for want of means to carry on longer. Prior to abandonment I let the south shaft on tribute to the Messrs. Scoble, of Frogmore, but after sinking a few feet the reef pinched and country hardened; this, together with the fact of the gold being alloyed with some foreign metal or mineral which we could not treat with, discouraged them also, and they gave up.

Not being able to meet the expenses longer I finally abandoned, but still hold to my first opinion, that with a little capital a good thing is to be obtained at Kenyu; and should the Government keep this strip of country from being selected, which they most certainly should do, Kenyu will yet give a good account of itself, both as regards gold and silver.

Should no party take up my old claim I shall return to it again as soon as I have the means.

I have some very nice stone showing both gold and galena pretty freely, which I would much like the Department of Mines to test, but I believe this cannot be done without my making personal application to the Warden, and at present I cannot afford the time. Perhaps you could manage the matter for me in your capacity as Mining Registrar.

With respect to the other claimholders at Kenyu, I have only to add that Willson and Malone abandoned a long time before us, through the impurity of the gold in their reef.

Cantwell and Co. never put in an appearance after their lease was granted.

In conclusion, I may add that at the time we abandoned we had about 30 tons of quartz to grass, from some of which I obtained as much as three grains to the lb., and from the rubble have washed half a dwt. to the dish; these, of course, were exceptional prospects, not the rule. In all cases I found the pyritous stone to contain the most gold, which we treated in a rough manner by roasting.

I smelted some few small samples of the gold, which, upon being removed from the crucible, bears the appearance of silver, but from the fact of its being brittle leads me to the belief that it contains bismuth.

I have, &c.,

EDWARD IND BROOKER.

P.S.—For the information of your department I may state that this line of reef can be traced for at least 4 miles. Have tried samples of the quartz from several parts of said line, and found all to contain a little gold. Also found another gold-bearing line about half-a-mile east from claim, but had not available means to prospect. Believe a few *bona fide* prospectors would do well in this locality.—E.I.B.

REPORT OF INSPECTOR OF MINES.

IN submitting my annual report for 1879, I do myself the honor to inform you that the Regulations for the inspection and regulation of mines other than coal and shale mines still work satisfactorily.

I am, however, not in a position to state how many accidents occurred throughout our gold and mineral fields during the year 1879. One thing is certain, that accidents are of far less frequent occurrence than formerly.

At Hill End (my head-quarters) one fatal and some minor accidents occurred during the year, principally through the careless use of dynamite. In the former or fatal case, a miner named Cock took a box of dynamite, into the Star of Peace mine and placed it near his work. Cock fired a blast, and by some means part of the burning fuse must have fallen into the box containing dynamite, which ignited and burned. Cock and his mate went to their work as if nothing had happened, being afraid of a reprimand from their manager for their carelessness in leaving such a large quantity of dynamite near their work or blasting operations. Both men inhaled such large quantities of fumes or obnoxious gases that it made them very ill. Cock died the following day, but his mate recovered.

The next serious accident occurred through one shift of men leaving a hole charged with dynamite without the slightest indication or warning to the relieving shift. The captain of the latter shift ordered his men to drill the hole deeper, not knowing or thinking that it contained about six inches of dynamite; the consequence was the dynamite exploded, injuring several persons, all of whom have recovered with the exception of one man who has lost his eyesight.

Some minor accidents I found by inquiry to be such as will occur while mining operations are carried on. My district being so large, embracing the whole Colony, that I am unable to state how many accidents, whether fatal or non-fatal, may have occurred on the gold and mineral fields of New South Wales. This information could probably be obtained in any future annual reports by the assistance of the Gold Fields Wardens and Mining Registrars.

Cancellation of Leases.

The present system of leasing as laid down in the Gold Fields Act of 1874 is often condemned by the miner, but I am sorry to state that although the miner often grumbles (no doubt in some cases with good cause) as to the locking up of auriferous lands by leaseholders, and the non-compliance with the labour conditions, he is often as much in fault. I know of several instances at Cargo, Hill End, and other mining districts, where miners laid complaints to me, and I have recommended the cancellation of gold-mining leases on the non-compliance of the labour conditions, but a few months after I found the complainants had become the applicants, and held those very lands (without employing labour, against which they so loudly complained), not for the sake of working and developing, but like the "Dog in the Manger," keeping them from anybody else.

If the leasing system is so bad the miner should not uphold himself what he condemns in others. I have for years never lost an opportunity to write officially against the abuses of our leasing system, which is faulty, but lately my eyes have been opened to the fact that the miner takes as much advantage of that system as anyone else.

Our Mining District.

Although our copper and tin mining industries have received a great stimulus through the rise in the value of both minerals, our gold-mining, more especially the quartz reefing industry, is still stagnated and languishing, not because all the payable auriferous quartz has been extracted, but through want of capital to develop, want of observation to guide, and want of

perseverance to carry out a thorough system of prospecting to develop our hitherto neglected mines which are scattered throughout the length and breadth of New South Wales. There can be but one opinion in the minds of those who are acquainted with our principal quartz-reefing districts, namely, that our auriferous quartz reef workings are only in their infancy, and that sooner or later New South Wales will be aroused from its lethargy and will become aware of the fact that prosperity of our gold-fields means prosperity to every profession, trade, or calling in New South Wales. I hope never to see a repetition of the memorable mining mania; but there is no reason why capital should not be profitably invested, and our gold-fields worked on a sound basis and made beneficial to all parties concerned.

Hill End and Tambaroora.

The alluvial workings on this gold-field are almost nil, or at least are anything but extensive, and quartz-mining has also suffered from general dulness. There is, however, good hopes that Hawkins Hill will again come to the front.

The principal mines at work are the Star of Peace and Krohman's Amalgamated Gold-mining Companies. The former is now down nearly 800 feet with their underlay shaft. The company have a large and most valuable property which only requires development to be second to none in New South Wales.

The Krohman's Amalgamated Gold-mining Company's mine consists of the well-known properties formerly owned by Beyers and Holterman's, Krohman's, and Carroll and Beard's Gold-mining Companies.

This company has lately struck payable gold in their perpendicular shaft at the depth of 622 feet. The vein is about 265 feet west of the most westerly veins worked in the former rich claims of Hawkins Hill; it is about 9 inches wide, and a new and important discovery. This proves what I prognosticated in my annual report of 1878 to be correct, namely, that the gold on the southern part of Hawkins Hill does not trend to the east, but strikes perpendicularly from one vein to the other. This has now received a practical proof, because quartz veins which were gold-bearing at the top level had been followed down on their eastern underlay to the depth of over 700 feet, whereas I have no doubt that the vein now struck in Krohman's will be found barren at the top levels. A trial crushing from this vein of 19 tons of stuff realized a total of 14 ozs. 16 dwts. 14 grs., which is payable, although I do not consider this a fair trial, as too much mullock and top stone have been taken.

The Monte Christo and other mines to the north should now amalgamate, their present separate holdings being too small to warrant the outlay necessary for the sinking of a deep perpendicular shaft and the erection of machinery. If this is accomplished there is a great probability of gold being struck in a perpendicular shaft, which would intersect the western veins, because in these mines, like that of Krohman's, the gold does not follow the veins in their eastern underlay, but rather, to use a miner's phrase, drops from one vein to the next in almost a perpendicular course; but I have written so much and so often on this peculiarity of the gold-bearing veins on nearly all our gold-fields that I can only plead as an excuse in introducing this already threadbare subject the importance of the case, because I am but too well aware that many valuable mining properties are now lying idle, the companies dissolved, and perhaps some of the former shareholders ruined, simply through want of a little observation on the part of those whose duty it should be to note when a break or a fault in a gold-bearing vein occurs, so that instead of spending thousands of pounds sterling in sinking or driving on one particular vein it might be found when and where a cross-cut should be put in to intersect and recover the lost lead, shoot, or run of gold. Cross-cutting has been greatly neglected in most of our quartz-reefing districts.

Cargo.

The Government-aided prospectors are still pursuing their search for gold at Gum Flat, but hitherto without success. The same might be said of the Belmore prospectors at Canowindra.

Forbes.

The South Lead Gold-mining Company is the principal mine at work in the whole district. On my last visit the mine made about 50 gallons of water per minute, and the company intended to erect pumping machinery in addition to their winding and puddling machinery. The mining management is in very able hands (Mr. Phillip Davies); and although the uninitiated might think the system of working expensive, it is nevertheless the most economical, practical, and safe way by which the difficulties of deep and wet ground, more especially the swelling bottom of the South Lead, can be successfully mastered.

Instead of following the auriferous washdirt (strata), lower levels are put, i.e., drives are put in some 20 feet below the washdirt, bores are put up to test the wash, and tramways are laid at the lower levels, which are connected with the workings above by jump-ups.

This company also uses Prior's patent safety cages for raising and lowering their men, a precaution I should like to see adopted in all our principal mines, which would be beneficial to the companies as well as their men.

Grenfell.

This once famous quartz-reefing district is very dull at present. I cannot help stating that the inhabitants of Grenfell lack that enterprise which they ought to display in the development of their gold-bearing quartz reefs. There is not a shadow of a doubt that if the Lucknow, the Homeward Bound, O'Brien's, and other reefs were sunk on and cross-cut through parallel running veins Grenfell would again flourish as a mining district.

Young.

Great hopes were entertained that the opening up of the reserve known as the Police Paddock, Young, would cause the revival of gold-mining in this district; but I am sorry to say that although some seventy claims were taken up in June and July last, on my last visit in December there were only about a dozen men at work, and none had earned the current rate of wages from the time they had first taken up their claims. However, the ground has been tried, the eyesore healed, and the authorities will be very little troubled in future about mining in the Police Paddock at Young. A few sluicing parties are still at work during the wet seasons, but as a whole mining in the district is dull.

Gulgong

Is also dull still. There is great hopes that the prospectors on the Black and other leads will be successful, and raise Gulgong to the Ballarat of New South Wales.

During the year I have travelled in the Kiandra, Adelong, Gundagai, Young, Grenfell, Forbes, Gulgong, Mudgee, Cargo, Canowindra, and the Bathurst districts, in all of which are large tracts of country which appear highly auriferous, and should be prospected.

COAL AND SHALE.

TABLE compiled from Reports furnished by the owners of Collieries, showing the quantity and value of Coal and Shale won during the year 1879 and the number of Miners employed in the Collieries.

Company.	Locality.	Miners employed.			Quantity.	Value.	Remarks.
		Above ground.	Under ground.	Total.			
COAL.							
Australian Agricultural Co.	Newcastle	99	654	753	Tons 189,426 0 0	£ 119,074 6 0	
Newcastle Coal Mining Co.	"	47	224	271	70,826 0 0	42,694 16 3	
Waratah	"	3	31	34	22,023 0 0	13,981 0 3	
South Waratah	"	48	196	244	68,901 16 0	43,022 10 10	
Newcastle Wallsend	"	106	530	636	162,000 0 0	106,575 0 0	
Co-operative	"	48	391	439	147,838 0 0	88,575 3 0	
Lambton	"	40	400	440	225,788 0 0	144,088 0 0	
New Lambton	"	32	220	252	89,942 0 0	57,712 18 0	
Ducksfield	"	25	177	202	107,660 0 0	80,298 6 0	
Brown's	"	24	198	222			
Redhead	"	4	16	20			
Goose Colliery	"	3	3	3	200 0 0	120 0 0	
Ferndale	"	21	120	141	1,450 0 0	725 0 0	
No. 2 Ferndale	"	1	2	3	39,875 0 0	27,912 10 0	
Alnwick	"	10	42	52	8 0 0	4 0 0	
Bloomfield	Four-mile Creek ..	1	2	3	8,855 0 0	4,234 19 0	
Sunderland	"	2	4	6	1,446 0 0	535 14 0	
Anvil Creek	"	7	16	23	2,251 0 0	525 6 0	
Mount Enterprise	"	1	3	4	2,800 0 0	1,166 0 0	
Mitchell's Creek	"	1	3	4	250 0 0	62 10 0	
Greta	Maitland	41	156	197	1,145 0 0	535 7 0	
Rathluba	"	4	18	22	38,742 0 0	19,371 0 0	
Rix's Creek	Singleton	1	2	3	9,200 0 0	6,440 0 0	
Singleton Coal Mining Co.	"	7	17	24	435 0 0	304 10 0	
Mount Wingen	Murrurundi	2	2	2	4,780 0 0	2,968 0 0	
Belford Colliery	Macquarie	1	1	2	50 0 0	25 0 0	
Morrist Point	"	1	1	1	200 0 0	140 0 0	
Parbury, Lamb, & Co. .	" .....	.....	.....	.....	230 0 0	130 0 0	
New Wallsend .....	" .....	.....	.....	.....	.....	.....	Merely exposed; not worked.
		573	3,429	4,002	.....	.....	Not at work.
					1,196,321 16 0	761,471 16 4	
Bulli	Illawarra	127	241	368	120,119 0 0	84,083 6 0	
Illawarra	Mount Pleasant	47	135	182	62,520 0 0	26,694 0 0	
Osborne, Wallsend	Mount Kiera	40	120	160	48,444 0 0	21,800 0 0	
Coal Cliff	Illawarra	25	140	165	35,935 0 0	21,658 0 0	
Nattai Coal Co. ....	.....	.....	.....	.....	.....	.....	Not at work.
Berrima Coal Co. ....	.....	.....	.....	.....	.....	.....	Not at work.
		239	636	875	267,018 0 0	154,235 6 0	
Lithgow Valley	Hartley	4	35	39	29,115 10 3	8,607 16 5	
Eakbank	"	7	45	52	43,634 0 0	12,376 7 6	
Bowenfels	"	2	8	10	6,792 0 0	2,037 12 0	
Vale of Clwydd	"	6	50	56	40,000 0 0	12,000 0 0	
Coerwell's .....	" .....	.....	.....	.....	500 0 0	150 0 0	
Katoomba Coal Co. ....	.....	.....	.....	.....	.....	.....	Not at work; 4 cwt. raised for Exhibition.
		19	138	157	120,041 10 3	36,171 15 11	
SHALE.							
N. S. W. Shale and Oil Co.	Hartley Vale	37	92	129	22,941 0 0	57,352 10 0	
Australian Kerosene Oil and Mineral Co.	Joadja Creek	2	50	52	9,578 0 0	9,578 0 0	
		39	142	181	32,519 0 0	66,930 10 0	

Department of Mines,
Sydney, 9th April, 1880.

2 B

HARRIE WOOD,
Under Secretary for Mines.

REPORT OF THE EXAMINER OF COAL-FIELDS FOR THE COLONY OF NEW SOUTH WALES, FOR THE YEAR 1879.

IN accordance with the provisions contained in the 26th section of the Coal Mines Regulation Act, 39 Vic. No. 31, I have the honor to submit a report from the Inspector of Collieries, with this my general report for the half-year ending 31st December, 1879.

The Inspector's, for the half-year ending June 30th last, with my general report for the same period, was transmitted to you on the 25th July last.

The information I have the honor to submit in respect to the condition and progress, &c., of the various coal and boghead mineral mines under my supervision during the year 1879 is as follows :—

Accidents in 1879, &c.

The number of fatal and non-fatal accidents exceeds those of the previous year by one only. In the year ending December 31st, 1878, there were eight fatal and fifteen non-fatal accidents. Two of the eight fatal accidents happened from "falls of coal," the third by being crushed between the buffers of two coal waggons, the fourth through a fall of timber and stone from the roof of the mine, the fifth by being run over by coal waggons, the sixth through injuries received by stone falling from the side of an air-shaft, and the seventh and eighth through being suffocated by foul air.

Twelve of the fifteen non-fatal accidents occurred from "falls of coal," the thirteenth from an explosion of cartridges, the fourteenth from a fall of stone of the roof, and the fifteenth through an explosion of carburetted-hydrogen gas.

In the year just ended, 1879, there were five fatal and nineteen non-fatal accidents, all of which have been inquired into, the scene of the accident examined, inquests attended, and full reports made you thereon. The names and occupations of the persons who died from injuries received and those who were seriously injured, as well as the names of the collieries, are as follows :—

Fatal accidents.—Lives lost.

A brakesman named John Kiernan was killed through losing power over a brake and being thrown out of a waggon on the Joadja Creek Company's tramway, near Nattai; a miner named George Oughton was killed by a crush taking place unexpectedly at the Wallsend Colliery, near Newcastle; a miner named Seal was killed by a fall of roof at the Osborne Wallsend Colliery, near Wollongong; a miner named James Sutton was killed by a fall of coal at the Newcastle Coal-mining Company's Colliery at the Glebe, near Newcastle; and a miner named John Robins was killed by a fall of coal at the Australian Agricultural Company's Colliery, near Newcastle.

Non-fatal accidents.

The first happened to a wheeler named A. Ramsay, whose head got jammed between a coal-skip and the unwrought coal at Brown's Colliery, near Hexham ; the second to a miner named Henry Wood, who fractured his leg by a fall of coal at the Illawarra Coal Company's Colliery, near Wollongong ; the third to a miner named William Price, who fractured his leg by a fall of coal at the Co-operative Colliery, Platsburg ; the fourth to a miner named Thomas Christlo, who fractured his leg by a fall of coal at the Bulli Colliery, near Wollongong ; the fifth to a miner named John Reynolds, who fractured his leg through being crushed between a coal-skip and prop at the Australasia Colliery, in the Newcastle District ; the sixth to a miner named Samuel Hineman, who was severely bruised by a fall of coal at the Duckenfield Colliery, near Hexham ; the seventh to a blacksmith named Henry Rushton, who was burnt by an explosion of gas at the Newcastle Wallsend Colliery, near Newcastle ; the eighth to a deputy overman named Thomas Lundy, who was burnt by an explosion of gas at the Newcastle Wallsend Colliery, near Newcastle ; the ninth and tenth to miners named John Weary and Joseph Tranter, who were crushed between skips and the side of the incline plane at Lambton Colliery, near Newcastle ; the eleventh to a miner named Charles Lilley, who fractured his leg by a fall of coal at the Lambton Colliery, near Newcastle ; the twelfth to a miner named John Harrison, who had two ribs broken and received injuries to his back from a fall of coal at the Newcastle Coal-mining Company's Colliery, near Newcastle ; the thirteenth to a miner named Joseph Farish, whose arm was fractured by stone hitting it from a shot-hole at the Lambton Colliery, near Newcastle ; the fourteenth to a miner named Robert Thornton, who had his leg fractured by a fall of coal at the Waratah Colliery, near Newcastle ; the fifteenth to a boy named George Morris, who was crushed whilst in the act of coupling a skip at the Co-operative Colliery, near Newcastle ; the sixteenth to a miner named Robert Bailey, who had his thigh fractured by a fall of coal at the Australian Agricultural Company's Colliery, near Newcastle ; the seventeenth to a horse-driver named Patrick Byron, who broke both thighs through slipping off the bumper of a loaded waggon, falling on the rails, and the front wheels of the waggon running over him, near the top of the incline at the Osborne Wallsend Colliery, near Wollongong ; the eighteenth to a miner named William Peters, whose leg was seriously injured and amputated from a fall of coal at the Duckenfield Colliery, near Hexham ; and the nineteenth to a miner named Albert Cavill, who seriously injured his body and both legs by a fall of coal.

SUMMARY showing the number of fatal and non-fatal accidents in 1879, names and occupations of the persons who died or were injured, cause of death or serious injury, and the names of the collieries where they occurred.

Date.	Name of Colliery.	Where situated.	Persons killed.	Persons seriously injured.	Occupation.	Cause of death or serious injury.	Lives lost			Non-fatal Accidents.					
							Thrown out of wagon.	By a crush.	Fall of stone.	Fall of coal.	Crushed by coal skips.	Coal falling on them when getting it.	Explosion of gas.	Stone from shot-hole.	Run over by a wagon.
1 January 3rd.....	Brown's	near Hexham .....	.....	A. Ramsay	Wheeler	Head crushed between coal skip and side.	..	..	..	1	..	..	..	..	..
2 " 11th	Illawarra Coal	" Wollongong .....	.....	Henry Wood	Miner	Leg fractured by fall of coal .....	..	..	..	..	1	..	..	..	..
3 " 16th	" Co-operative	" Newcastle .....	.....	Wm. Price	"	Killed through losing power over a brake and being thrown out of wagon.	1	..	..	..	..	..	..	..	..
4 February 6th	Joadja Creek	" Nattai	John Kiernan .....	.....	Brakeman .....	.....	..	..	..	..	..	..	..	..	..
5 " 12th	Bull	" Wollongong .....	.....	T. Christie	Miner	Leg fractured by fall of coal .....	..	..	..	..	1	..	..	..	..
6 " 13th	Australasia	" Newcastle .....	.....	J. Reynolds	"	Leg fracture—crushed between coal skip and prop.	..	..	..	..	..	..	..	..	..
7 " 27th	Duckenfield	Hexham .....	.....	S. Hineman	"	Seriously bruised by fall of coal.	..	..	..	..	1	..	..	..	..
8 " "	Newcastle Wall-send	" Newcastle	Geo. Oughton .....	.....	" .....	Killed by a crush occurring unexpectedly.	1	..	..	..	..	..	..	..	..
9 March 1st.....	" .....	" .....	.....	Henry Rushton	Blacksmith	Burnt by an explosion of gas in the mine.	..	..	..	..	..	1	..	..	..
10 " 10th .....	" .....	" .....	.....	Thos. Lundy	Deputy overman	Crush between skip and side of incline plane.	..	..	..	..	1	..	1	..	..
11 " "	Lambton .....	" .....	.....	John Weary	Miner .....	.....	..	..	..	..	..	..	..	..	..
12 " 21st .....	" .....	" .....	.....	Joseph Tranter	"	Leg fractured by a fall of coal .....	..	..	..	1	..	1	..	..	..
13 " 7th	Newcastle C. M. Company .....	" .....	.....	Charles Lilley	"	Ribs broken and injuries to back from fall of coal.	..	..	..	..	1	..	..	..	..
14 April 7th .....	" .....	" .....	.....	John Harrison .....	" .....	.....	..	..	..	..	..	..	..	..	..
15 " 24th	Lambton .....	" .....	.....	Joseph Farish	"	Arm fractured by stone from a shot-hole.	..	..	..	..	1	..	..	..	..
16 " 29th	Waratah .....	" .....	.....	Robert Thornton	"	Leg fractured by fall of coal .....	..	..	..	..	..	1	..	..	..
17 May 12th	Co-operative .....	" .....	.....	George Morris	Coupler of skips, &c. Miner	Crushed whilst in the act of coupling a skip.	..	..	..	..	1	..	..	..	..
18 " 14th	Osborne Wall-send	near Wollongong	Joseph Seal .....	.....	.....	Killed by a fall of stone from the roof.	..	..	..	1	..	..	..	..	..
19 June 11th	Australian Agrict. Co.	" Newcastle .....	.....	Robert Bailey	"	Thigh fractured by a fall of coal.	..	1	..	..	1	..	..	..	..
20 July 15th	Newcastle C. M. Company	"	James Sutton .....	.....	.....	From a fall of coal—died two hours after it fell on him.	..	1	..	..	..	..	..	..	..
21 " 22nd	Osborne Wall-send	near Wollongong	Patrick Byron .....	.....	Horse-driver	Both thighs broken through slipping off bumper of loaded wagon and wheels running over him.	..	..	..	..	..	..	..	1	..
22 " 25th	Duckenfield	Hexham .....	.....	William Peters	Miner	Leg amputated through a fall of coal.	..	..	..	..	..	1	..	..	..
23 August 11th	Australian Agrict. Co.	" Newcastle	John Robins .....	.....	" .....	Killed by a fall of coal.	..	..	1	..	..	..	..	..	..
24 November 4th	Bull	" Wollongong .....	.....	Albert Cavill	"	Injuries to body and both legs—fall of coal.	1	1	1	2	5	10	2	1	1

The returns which have been collected and forwarded to me by the Mining Department show the following figures for the year 1879 :—

COAL RETURN

	Northern District.	Southern District.	Western District.	Total.
Tons of round and small coal raised	1,196,321 16 cwt.	267,018	120,041	1,583,380 16 cwt.
Value of round and small coal raised	£761,471 16s. 4d.	£154,235	£35,172	£950,878 16s. 4d.
Persons employed above ground ...	573	239	19	831
Persons employed under ground ...	3,429	636	139	204

PETROLEUM OIL CANNEL COAL OR BOGHEAD MINERAL RETURN.

WESTERN AND SOUTHERN DISTRICTS.

Tons of Boghead Mineral or Petroleum Oil Cannel Coal raised ...	32,519
Value of Boghead Mineral or Petroleum Oil Cannel Coal raised...	£66,930 10s.
Persons employed above ground ...	39
Persons employed under ground ...	142

NORTHERN DISTRICT.

Comparative Statement of Returns for 1878-9.

	Men above ground.	Men under ground.	Tons of round and small Coal raised.	Value.
Australian Agricultural, Co-operative, Newcastle, Wallsend, Waratah, New Lambton, Lambton, Brown's, Duckenfield, Ferndale, Newcastle Coal, Alnwick, Goose, Greta, Anvil Creek, Singleton, Rix's Creek, Mount Wingen, and Lake Macquarie Collieries ...	573	3,429	1,196,321	£ 761,471 16 4 s. d.
Total in 1879	573	3,429	1,196,321	761,471 16 4
" 1878	641	3,337	1,241,036	754,143 1 3
Decrease in 1879	68	.....	44,715	.....
Increase in 1879 .....	.....	92	.....	7,328 15 1

SOUTHERN DISTRICT.

Comparative Statement of Returns for 1878-9.

	Men above ground.	Men under ground.	Tons of round and small Coal raised.	Value.
Bulli, Coal Cliff, Illawarra Coal, and Osborne Wallsend Collieries ...	239	636	267,018	£ 154,235
Total in 1879	239	636	267,018	154,235
" 1878	191	471	238,553	141,561
Increase in 1879	48	165	28,465	12,674

WESTERN DISTRICT.

Comparative Statement of Returns for 1878-9.

	Men above ground.	Men under ground.	Tons of round and small Coal raised.	Value.
Eskbank, Lithgow Valley, Vale of Clwydd, Bowenfels, and Coerwull Collieries	19	189	120,041	£ 35,172
Total in 1879	19	189	120,041	35,172
„ 1878	21	181	95,908	25,232
Decrease in 1879	2	.....	.....	.....
Increase in 1879 .....	.....	8	24,133	9,940

THE following Table shows comparisons between the year under notice and the two preceding years as Consumption, total output and value, tons of round and small Coal raised for each person and the quantity of Coal raised per life lost.

Years.	Exports to Intercolonial Ports.			Exports to Foreign Ports.			Total Exports.			Home Consumption.
	Quantity.	Average per ton.	Value.	Quantity.	Average per ton.	Value.	Quantity.	Average per ton.	Value.	
	Tons.	£ s. d.	£	Tons.	£ s. d.	£	Tons.	£ s. d.	£	Tons.
1877	563,757	0 13 8-64	386,740	351,970	0 14 10-08	232,237	915,727	0 14 2-08	648,977	528,544
1878	623,323	0 13 8-77	427,954	333,097	0 14 7-72	230,452	1,006,420	0 14 0-38	708,406	569,077
1879	621,067	0 13 6-75	421,198	376,962	0 14 6-13	273,509	998,049	0 13 11-04	694,707	585,331
Totals	1,808,167	0 13 8-04	1,235,892	1,112,029	0 15 0-46	836,198	2,920,196	0 14 0-08	2,063,090	1,682,952

From the above we find that in the year 1879 we exported 2,236 tons less coal to intercolonial ports than in the preceding year, and 6,135 tons less to foreign ports. The intercolonial decrease during the year under review is no doubt owing to New Zealand and Victoria having taken larger supplies of coal from the Bay of Islands and Greymouth collieries, which mines have during the year been worked more extensively than hitherto. The total exports are 8,371 tons less than in 1878, whilst the home consumption exceeded it by 16,255 tons, and the total output for the year under notice exceeded that of 1878 by 7,883 tons. It will also be seen that the quantity of coal raised during the last three years for each person employed above and under

From these returns we find that the greatest increased yield is in the Southern District (28,465 tons, valued at £12,674); the next largest increase is in the Western District (24,133 tons, valued at £9,940); whilst in the Northern District there has been a decrease of 44,715 tons in the yield, and an increase in the value of the coal raised of £7,328 15s. 1d.

The increase the returns show of £7,328 15s. 1d. in the value of the round and small coal sold from the Northern District, when there is a decrease of 44,715 tons in the yield, appears to me very strange, especially when the selling price of round and small coal is supposed to have been the same at the associated collieries in the year under notice as it was in the previous year, and not thought to have been higher at the non-associated collieries. And more small coal, which sells at about half the price of round, is known to have been sold in 1879 than in the previous year, which one would have imagined would tend to reduce rather than increase the total average value per ton. The greatest difference in value appears to be in the Lambton returns, thus:—

1878	...	213,332 tons round and small coal	£119,881 equal to 11s. 2½d. per ton.
1879	...	225,788 " " " " " "	144,088 " 12s. 9d. " "

regards the Exports of Coal to Foreign and Intercolonial Ports, the quantity used for Home employed in and about the Collieries, value of round and small Coal raised for each person so employed,

Total Output and Value.			Coal raised per each person employed in and about the Mines.			Value of Coal raised per each person employed in and about the Mines.			Tons of Coal raised per life lost.		
Quantity.	Average per ton.	Value.	Quantity.	Average ton per each person employed.	Persons employed.	Value.	Average value per each person employed.	Persons employed.	Quantity.	Average tons per each life lost.	Lives lost.
Tons.	£ s. d.	£ s. d.	Tons.	Tons.	Number	£	£ s. d.	Number	Tons.	Tons.	Number
1,444,271	0 11 10-74	858,998 8 2	1,444,271	310	4,657	858,999	184 9 0	4,657	1,444,271	206,324	7
1,575,497	0 11 8-28	920,986 7 4	1,575,497	328	4,792	920,986	192 3 8	4,792	1,575,497	196,987	8
1,583,890	0 12 0-12	960,878 18 3	1,583,890	314	5,085	960,878	188 17 0	5,085	1,583,890	316,676	5
4,603,148	0 11 10-87	2,730,813 13 9	4,603,148	317	14,484	2,730,813	188 10 1	14,484	4,603,148	230,157	20

ground at the collieries has averaged 317 tons of round and small coal per year, and that each person so employed added £188 10s. 1d. per annum to the wealth of the Colony.

In the years 1877, '78, and '79, twenty lives were lost for 4,603,148 tons of coal raised—that is, 230,157 tons for each life lost; whilst in Great Britain, in the years 1876, '77, and '78, 3,554 lives were lost for 483,633,783 tons of mineral wrought—that is, 136,081 tons for each life lost. As I said in my last year's report, "Considering that we have no large quantities of explosive gas to contend with in our coal mines, and are at present exempt from those fearful explosions attended with great loss of life, I think the accidents are greater in proportion to the quantity of coal raised than they ought to be if more care was exercised by the miners."

These figures may perhaps be sufficiently explanatory in themselves, so far as a comparison of our export trade and home consumption, &c., for the whole Colony is concerned ; but I again think it may also be interesting for each district to know the proportion the accidents and deaths bear to the persons employed, and the quantity and value of coal raised for each person employed in and about the mines, &c., which is as follows :—

NORTHERN DISTRICT.

Number of persons employed in and about the mines	...	...	...	...	4,002
Number of persons employed underground	...	...	...	...	3,429
Quantity of coal raised in tons	...	...	...	...	1,196,321
Number of non-fatal accidents	...	...	...	...	15
Number of lives lost by accidents	...	...	...	...	3
Persons employed per each non-fatal accident	...	...	...	...	266
Persons employed per each life lost	...	...	...	...	1,334
Tons of round and small coal raised per each non-fatal accident	...	...	...	...	79,754
Tons of round and small coal raised per each life lost	...	...	...	...	398,773
Tons of coal raised per each person employed in and about the mines	...	...	...	...	291
Tons of coal raised per each person employed underground	...	...	...	...	348
Value of coal raised	...	...	...	...	£ 761,471 s. 16 d. 4
Value of coal raised per each person employed in and about the mines	...	...	...	...	190 5 5
Value of coal raised per each person employed underground	...	...	...	...	222 1 4

SOUTHERN DISTRICT.

Number of persons employed in and about the mines	...	...	...	...	875
Number of persons employed underground	...	...	...	...	636
Quantity of coal raised in tons	...	...	...	...	267,018
Number of non-fatal accidents	...	...	...	...	4
Number of lives lost by accidents	...	...	...	...	2
Persons employed per each non-fatal accident	...	...	...	...	219
Persons employed per each life lost	...	...	...	...	437
Tons of round and small coal raised per each non-fatal accident	...	...	...	...	66,754
Tons of round and small coal raised per each life lost	...	...	...	...	133,509
Tons of coal raised per each person employed in and about the mines	...	...	...	...	305
Tons of coal raised per each person employed underground	...	...	...	...	420
Value of coal raised	...	...	...	...	£ 154,235 s. 0 d. 0
Value of coal raised per each person employed in and about the mines	...	...	...	...	176 5 4
Value of coal raised per each person employed underground	...	...	...	...	242 10 1

WESTERN DISTRICT.

Number of persons employed in and about the mines	...	...	...	...	158
Number of persons employed underground	...	...	...	...	139
Quantity of coal raised in tons	...	...	...	...	120,041
Number of non-fatal accidents	...	...	...	...	nil
Number of lives lost by accidents	...	...	...	...	nil
Persons employed per each non-fatal accident	...	...	...	...	no accident
Persons employed per each life lost	...	...	...	...	no life lost

Tons of round and small coal raised per each non-fatal accident ...	...	...	120,041 tons raised without accident
Tons of round and small coal raised per each life lost ...	...	...	120,041 tons raised without a life lost
Tons of coal raised per each person employed in and about the mines ...	...	...	760
Tons of coal raised per each person employed underground ...	...	...	863
Value of coal raised ...	...	...	£ 35,172 0 0
Value of coal raised per each person employed in and about the mines ...	...	...	222 12 1
Value of coal raised per each person employed underground ...	...	...	253 0 8

The following table shows comparisons between the year under notice and the preceding year, as regards the proportion the accidents and deaths bear to the persons employed, the quantity and value of coal raised for each person employed in and about the mines and underground, in the Northern, Southern, and Western Districts.

	Northern District.		Southern District.		Western District.	
	1878.	1879.	1878.	1879.	1878.	1879.
Number of persons employed in and about the mines	3,978	4,002	662	875	152	158
Number of persons employed underground	3,337	3,429	471	636	131	139
Quantity of coal raised in tons	1,241,086	1,196,321	238,553	267,018	95,908	120,041
Number of non-fatal accidents	10	15	3	4	2	nil
Number of lives lost by accidents	5	3	3	2	nil	nil
Persons employed per each non-fatal accident	398	266	221	219	76	no accident
Persons employed per each life lost	796	1,334	221	437	no life lost	no life lost
Tons of round and small coal raised per each non-fatal accident	124,108	79,754	79,518	66,754	47,954	120,041 tons raised without an accident
Tons of round and small coal raised per each life lost	248,207	398,773	79,518	133,509	95,908 tons raised without a life lost	120,041 tons raised without a life lost
Tons of coal raised per each person employed in and about the mines	312	291	360	305	631	760
Tons of coal raised per each person employed underground	372	343	506	420	732	863
Value of coal raised	£ s. d. 754,143 1 3	£ s. d. 761,471 16 4	£ s. d. 141,561 3 6	£ s. d. 154,235 0 0	£ s. d. 25,232 2 7	£ s. d. 35,172 0 0
Value of coal raised per each person employed in and about the mines	189 11 6	190 5 5	213 16 9	176 5 4	166 0 0	222 12 1
Value of coal raised per each person employed underground	225 19 10	222 1 4	300 11 1	242 10 1	192 12 2	253 0 8

The following statistical return, furnished me by Mr. W. R. Logan, the Collector of Customs, Newcastle, shows the greatest yearly increase in the export of coal from this port has been—To Java, 12,384 tons ; India, 10,899 tons ; South Australia, 9,291 tons ; Mauritius, 7,664

tons ; Singapore, 7,184 tons ; Rangoon, 6,645 tons ; Tasmania, 6,087 tons ; Callao, 5,303 tons ; Sourabaya, 3,858 tons ; Queensland, 2,844 tons ; Portland O., 2,570 tons ; and the greatest decreases have been—Victoria, 12,688 tons ; Hongkong, 35,365 tons ; San Francisco, 24,071 tons ; Japan, 15,042 tons ; New Zealand, 8,125 tons ; and Tahiti, 2,165 tons.

New South Wales—Port of Newcastle—Export of Coal.

To Foreign and Intercolonial Ports.	1878.	1879.	Increase.	Decrease.	Total Decrease for 1879.
	Tons.	Tons.	Tons.	Tons.	Tons.
Victoria.....	288,666	275,978	.....	12,688	.....
New Zealand	181,824	173,699	.....	8,125	.....
South Australia.....	90,347	99,638	9,291	.....	.....
Tasmania	18,510	24,597	6,087	.....	.....
Queensland	8,402	11,246	2,844	.....	.....
Western Australia.....	.....	1,946	1,946	.....	.....
United States	1,255	.....	.....	1,255	.....
San Francisco	80,711	56,640	.....	24,071	.....
Japan	30,146	15,104	.....	15,042	.....
India.....	51,543	62,442	10,899	.....	.....
Hong Kong	71,924	36,559	.....	35,365	.....
Manila	16,091	16,822	731	.....	.....
Java	7,226	19,610	12,384	.....	.....
China	10,650	8,928	.....	1,722	.....
Mauritius.....	1,607	9,271	7,664	.....	.....
New Caledonia	3,366	3,273	.....	93	.....
Valparaiso	586	3,312	2,726	.....	.....
Guam .....	.....	3,839	3,839	.....	.....
Port Natal .....	.....	2,420	2,420	.....	.....
Rangoon .....	.....	6,645	6,645	.....	.....
Singapore.....	.....	7,184	7,184	.....	.....
Petropaulovski	2,350	934	.....	1,416	.....
Callao .....	.....	5,303	5,303	.....	.....
Sourabaya .....	.....	3,858	3,858	.....	.....
Portland O. ....	.....	2,570	2,570	.....	.....
Africa .....	.....	1,053	1,053	.....	.....
Guaguel .....	.....	1,077	1,077	.....	.....
Honolulu	3,586	3,588	2	.....	.....
Bankok.....	.....	550	550	.....	.....
La Plata .....	.....	502	502	.....	.....
Tahiti	2,425	260	.....	2,165	.....
Ilo Ilo .....	.....	499	499	.....	.....
Fiji	500	488	.....	12	.....
S. S. Islands .....	.....	540	540	.....	.....
Cebu	270	.....	.....	270	.....
	871,985	860,375	90,614	102,224	11,610

DECENNIAL RETURN—Port of Newcastle—Foreign and Intercolonial Trade.

Year.	Entered inwards from Foreign and Intercolonial Ports.		Cleared outwards for Foreign and Intercolonial Ports.		Total value of Imports from Foreign and Intercolonial Ports.			Quantity and value of Coal exported to Foreign and Intercolonial Ports.			Total value of exports (including Coal) to Foreign and Intercolonial Ports.			Total amount of Revenue collected.					
	No. of vessels.	Tonnage.	No. of vessels.	Tonnage.				Tons.	Value.										
					£	s.	d.		£	s.	d.		£	s.	d.		£	s.	d.
1870	765	283,091	1,046	383,242	154,816	5	8	511,545	223,077	7	0	241,435	16	8	32,145	5	7		
1871	743	277,959	1,040	376,378	203,168	2	7	489,714	208,833	9	0	236,683	9	3	26,590	1	9		
1872	876	342,514	1,092	427,845	268,141	12	11	565,994	243,911	18	0	282,834	9	10	41,196	9	8		
1873	978	389,121	1,259	498,468	310,101	11	11	650,899	412,631	5	9	591,032	6	6	48,864	16	8		
1874	1,156	510,291	1,269	543,693	343,297	19	11	723,844	496,448	15	0	697,048	7	7	59,387	7	11		
1875	1,162	510,902	1,341	573,826	480,771	19	6	771,144	527,949	12	10	644,615	0	6	60,818	4	3		
1876	1,023	433,423	1,309	535,738	469,988	2	8	719,050	496,502	0	0	585,114	16	2	54,031	8	0		
1877	1,065	469,348	1,328	577,376	502,861	6	4	781,502	540,560	0	0	680,750	11	7	56,584	3	11		
1878	1,153	542,743	1,407	655,885	444,760	18	9	871,985	602,557	0	0	699,252	13	0	60,511	14	0		
1879	1,031	492,163	1,330	651,501	340,501	0	0	860,375	591,090	0	0	648,427	0	0	57,477	18	9		

RETURN showing the price per ton and quantity of Coal raised from 1829 to 1879 inclusive.

Coal.				Coal.			
Year.	Tons.	Average price per ton.	Value.	Year.	Tons.	Average price per ton.	Value.
		£ s. d.	£ s. d.			£ s. d.	£ s. d.
1829	780	0 10 1-23	394 0 0	1855	137,076	0 12 11-96	89,082 0 0
1830	4,000	0 9 0-00	1,800 0 0	1856	189,960	0 12 4-96	117,908 0 0
1831	5,000	0 8 0-00	2,000 0 0	1857	210,434	0 14 0-97	148,158 0 0
1832	6,000	0 7 0-00	2,100 0 0	1858	216,397	0 14 11-84	162,162 0 0
1833	328	0 7 6-73	124 0 0	1859	308,213	0 13 3-14	204,371 0 0
1834	8,490	0 8 10-00	3,750 0 0	1860	368,862	0 12 3-36	226,493 0 0
1835	12,392	0 8 10-19	5,483 0 0	1861	342,067	0 12 9-52	218,820 0 0
1836	12,646	0 9 1-06	5,747 0 0	1862	476,522	0 12 9-73	305,234 0 0
1837	16,083	0 9 8-81	7,828 0 0	1863	433,889	0 10 10-66	236,230 0 0
1838	17,220	0 9 9-05	8,399 0 0	1864	549,012	0 9 10-10	270,171 0 0
1839	21,283	0 9 9-73	10,441 0 0	1865	585,525	0 9 4-43	274,303 0 0
1840	30,256	0 10 10-86	16,498 0 0	1866	774,238	0 8 4-44	324,049 0 0
1841	34,841	0 12 0-00	20,905 0 0	1867	770,012	0 8 10-79	342,655 0 0
1842	39,900	0 12 0-00	23,940 0 0	1868	954,231	0 8 9-08	417,809 0 0
1843	25,862	0 12 6-54	16,222 0 0	1869	919,774	0 7 6-32	346,146 0 0
1844	23,118	0 10 8-34	12,363 0 0	1870	868,564	0 7 3-54	316,836 0 0
1845	22,324	0 7 10-27	8,769 0 0	1871	898,784	0 7 0-47	316,340 0 0
1846	38,965	0 7 4-06	13,714 0 0	1872	1,012,426	0 7 9-92	396,198 0 0
1847	40,732	0 6 9-01	13,750 0 0	1873	1,192,862	0 11 1-94	665,747 0 0
1848	45,447	0 6 3-38	14,275 0 0	1874	1,304,567	0 12 1-37	790,224 0 0
1849	48,516	0 6 0-45	14,647 0 0	1875	1,329,729	0 12 3-89	819,429 17 2
1850	71,216	0 6 6-77	23,375 0 0	1876	1,319,918	0 12 2-06	803,300 5 6
1851	67,610	0 7 6-51	25,546 0 0	1877	1,444,271	0 11 10-74	858,998 8 2
1852	67,404	0 10 11-33	36,885 0 0	1878	1,675,497	0 11 8-28	920,936 7 4
1853	96,809	0 16 1-51	78,059 0 0	1879	1,583,380	0 12 0-12	950,878 18 3
1854	116,642	1 0 5-63	119,380 0 0	Total	20,640,074	0 10 8-0	11,008,871 16 5

From the above return we find that the quantity of coal raised in the year 1879 exceeded that of 1869 by 663,607 tons; the year 1869 that of 1859 by 611,561 tons; the year 1859 that of 1849 by 259,697 tons; the year 1849 that of 1839 by 27,233 tons; the year 1839 that of 1829 by 20,503 tons; and that the total quantity of coal raised in the Colony to the 31st December last was 20,640,074 tons.

Newcastle Export Trade.

For some time our Newcastle coal trade has been absorbing a very great deal of interest; various discussions have taken place and opinions given during the past year with respect to the decrease in the exports of coal from the Newcastle District, and a very general opinion expressed that it has arisen through the high price of coal which has existed for the last seven and a half years, viz., 14s. per ton on board vessels in Newcastle Harbour, many people saying that if the price had been less there would have been a very large increase instead of a decrease in the 1879 exports. For those who take an interest in the matter I annex the following table showing the tonnage, declared value, and yearly increase or decrease of the exports of coal from Great Britain, from which it will be seen that when the price per ton was low in England it did not double or very largely increase the yearly export of coal. The greatest decrease was in 1877, when it sold at 10s. 2d., viz., 645,789 tons, and the largest increase, except one, was in 1874, when sold at 17s. 3d., viz., 1,309,639 tons.

Great Britain—Exports of Coal.

Year.	Tons Exported.	Price per Ton.	Increase—Tons.	Decrease—Tons.
		s. d.		
1861	7,934,832	9 2	.....	.....
1862	8,380,673	9 1	445,841	.....
1863	8,342,500	9 0	.....	38,173
1864	8,900,872	9 6	558,372	.....
1865	9,283,214	9 8	382,342	.....
1866	10,142,260	10 3	859,046	.....
1867	10,565,829	10 5	323,569	.....
1868	10,967,062	9 11	401,233	.....
1869	10,744,945	9 7	.....	222,117
1870	11,702,649	9 8	957,704	.....
1871	12,747,989	9 11	1,045,340	.....
1872	13,198,494	15 10	450,505	.....
1873	12,617,666	20 11	.....	580,928
1874	13,927,205	17 3	1,309,639	.....
1875	14,544,916	13 3	617,711	.....
1876	16,265,839	10 11	1,720,923	.....
1877	15,420,050	10 2	.....	645,789
1878	15,483,816	9 5	63,766	.....
1879	16,435,642	9 2	951,826	.....

RETURN showing the quantity raised, price per ton, and value of the Boghead Mineral, or Petroleum Oil (cannel coal), commonly called Kerosene Shale, from 1865 to 1879 inclusive.

Year.	Tons.	Average price per ton.	Value.	Year.	Tons.	Average price per ton.	Value.
		£ s. d.	£ s. d.			£ s. d.	£ s. d.
1865	570	4 2 5·47	2,350 0 0	1874	12,100	2 5 1·48	27,300 0 0
1866	2,770	2 18 10·48	8,154 0 0	1875	6,197	2 10 2·22	15,500 0 0
1867	4,079	3 14 9·21	15,249 0 0	1876	15,998	3 0 0·00	47,994 0 0
1868	16,952	2 17 7·11	48,816 0 0	1877	18,963	2 9 0·82	46,524 10 0
1869	7,500	2 10 0·00	18,750 0 0	1878	24,371	2 6 11·49	57,211 0 0
1870	8,580	3 4 3·18	27,570 0 0	1879	32,519	2 1 10·96	66,930 10 0
1871	14,700	2 6 3·91	34,050 0 0				
1872	11,040	2 11 11·91	28,700 0 0		194,189	2 11 0·40	£495,574 0 0
1873	17,850	2 16 6·55	50,475 0 0				

From the above we find that the quantity of Boghead Mineral, or Petroleum Oil (cannel coal), raised in 1879 exceeded that of 1878 by 8,148 tons; and that each year since 1876 there has been a most satisfactory increase in the quantity raised, and used for the manufacture of gas in the colonies and foreign countries, and petroleum oil and other products.

Unfenced trial and abandoned Coal Pits.

Last November I served Messrs. Price, Tulip, Pearse, Marshall, Petherbridge, and Sparke and Cliff, with notices to fence in a number of abandoned coal pits at and near Four-Mile Creek, many of which were very dangerous, and I am glad to say that prompt measures were at once taken by the owners of the land for complying with the law in this respect, and that they are now all securely fenced or logged over. The abandoned shafts on Government land at Four-mile Creek have also been logged over and fenced.

Complaints made to me of Deficient Ventilation.

At the request of the miners' general secretary and some of the miners' district secretaries I have inquired into complaints made of deficient ventilation, &c., at the Newcastle Coal-mining Company's, Vale of Clwydd, Greta, and Coal Cliff Collieries, and after my visiting the mines the matters complained of have been immediately remedied by the colliery managers.

Opening out and Prospecting of New Mines.

In the Northern District Mr. Murray, Mr. Jones and another, and Mr. W. S. Bennett have commenced working on a small scale seams of coal at Lake Macquarie.

At Four-mile Creek Messrs. Beveridge and Bettie have opened out a coal mine called the "Mount Enterprise," on land belonging to Mr. Fane De Salia.

At Tighe's Hill Messrs. Bland and Williams have sunk a pit, and are working on a small scale the Borehole seam; the shaft is close to Ferndale Colliery, and is called No. 2 Ferndale.

Mr. Rowan has re-opened and is working Nash's coal seam at Mount Wingen.

Messrs. Parbury and Lamb have opened out a 22 feet seam of coal on their land to the south of Lake Macquarie Heads. The shaft having water in when I visited the place I was unable to make a section of the seam, but shall do so by giving the manager notice before visiting it a second time. Progress is being made with the tramway in course of construction for deepening the entrance to the lake.

	Grey post.	ft. in.
	Brown coaly slate.	
	Coal	1 6
	Band	0 1
	Coal	0 2
	Pipeclay	0 1½
	Coal	0 4
	Band	0 0½
	Coal	4 6½
	Band	0 0½
	Coal	3 4½
	Coarse coal	0 3
	Coarse coal	3 1
	Pipeclay	0 3
	Black shale	1 3½
	Coal	2 4
	Parting.	
	Coal	4 9
	Hard grey post.	
	Total thickness	22 2½

Say 22 feet 3 inches with bottom parting.

This represents a section of the Borehole seam of coal proved by borings by Mr. Gregson, at the Australian Agricultural Company's shoots adjoining the Newcastle Harbour, opposite Bullock Island. The coal is of excellent quality and the seam is thicker than it has yet been found at any of the collieries in the Newcastle District, viz., 22 feet 3 inches.

In the Western District Mr. North and others are putting up machinery, &c., for working coal at Katoomba, adjoining the Great Western Railway. A section of the seam is exhibited in the trophy at the Sydney International Exhibition.

In the south Mr. Atkinson is endeavouring to open out and work his coal mine at Cataract Creek, near Berrima, by forming it into a company; and the Australian Kerosene Oil and Mineral Company have now got their tramway completed to within 3 miles of the Great Southern Railway at Nattai, and have sent considerable quantities of their boghead mineral to English and other foreign gasworks for the purpose of increasing the illuminating power and quality of the gas. They are also manufacturing a very excellent illuminating oil and other products from the mineral. Thirty-two large crude oil retorts, refinery, &c., have been erected close to the mine, which reflects great credit to the company's manager, Mr. Fell, for the excellent manner in which the works have been planned and erected, and the economical way in which the oil retorts, &c., are worked.

Borings for Coal.

Mr. Gregson, the General Superintendent of the Australian Agricultural Company, has kindly given me, to publish for general information, the following account of borings commenced in strata considerably below the Borehole seam of coal, in the neighbourhood of Newcastle, county of Northumberland.

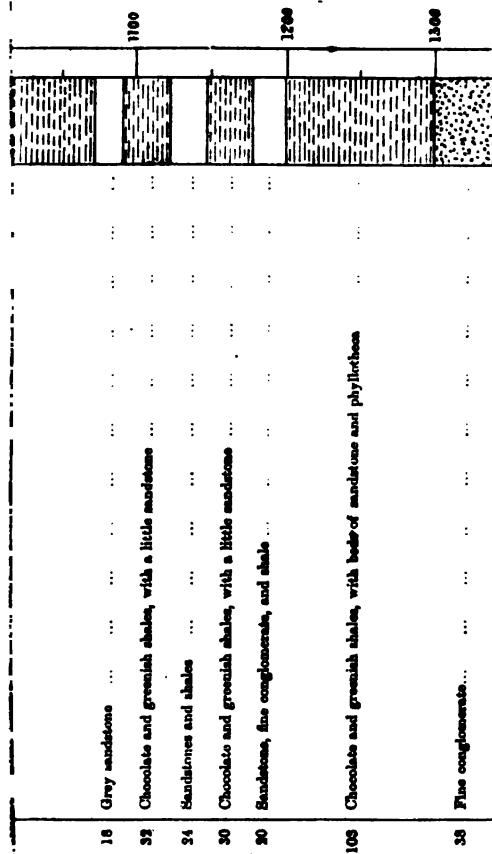
Account of strata bored through below the Borehole seam by Mr. Steel, on the Australian Agricultural Company's Platts' Estate, near Newcastle:—

Name of Strata.	Thickness of Strata.		Name of Strata.	Thickness of Strata.	
	feet	inches		feet	inches
Surface clay	8 0	Blue slate ...	...	0 5½
Soft sandstone	8 0	Blue post ...	...	0 7
Coaly slate	0 6	Blue slate ...	...	0 3½
Coal, coarse	0 4	Post and slate girdles ...	...	1 2½
Hard pipeclay	0 1	Gray post ...	...	1 6½
Coal, coarse	0 1	Blue slate ...	...	0 9½
Fireclay band	0 1	Gray post ...	...	0 6½
Coal, coarse	1 0	Ironstone ...	...	0 0½
Parting	0 0½	Gray ...	...	0 7½
Coal, coarse	0 8	Post and slate girdles ...	...	1 0½
Coal, coarse	0 5	Ironstone ...	...	0 0½
Soft gray stone...	...	1 0	Blue slate ...	...	1 6½
Hard blue slate	0 7½	Brown slate and smut ...	...	1 1½
Pipeclay and slate	7 0	Blue slate ...	...	9 2½
Chert with bands of pipeclay	1 2½	Blue post and slate girdle ...	...	2 0½
Pipeclay and ironstone	2 2½	Blue post ...	...	0 6½
Chert	0 6	Blue slate ...	...	6 7
Hard pipeclay	3 7½	Gray post ...	...	0 5½
Brown coaly slate	0 2½	Blue slate ...	...	1 10½
Blue slate	4 0	Brown slate ...	...	0 9½
Slate and coal pipes	0 7	Blue slate ...	...	9 10½
Blue slate	3 0	Blue slate and post girdles ...	...	2 1½
Slate and coal pipes	1 0	Pipe clay and chert ...	...	1 0½
Hard gray post...	...	0 6	Blue post ...	...	0 8½
Blue slate	2 11½	Blue slate ...	...	7 3
Brown slate	0 6	Blue post ...	...	1 5
Shale	0 2½	Blue slate ...	...	28 5½
Coal	0 6½	Blue post ...	...	0 10
Band of shale	0 4	Blue slate ...	...	5 9½
Coal	0 6	Pipeclay and pebbles ...	...	1 10½
Band	0 1	Blue post and pebbles ...	...	4 11
Coal	0 6½	Blue slate and post beds ...	...	15 10½
Brown shale	0 2	White chert rock ...	...	0 7½

Name of Strata.	Thickness of Strata.		Name of Strata.	Thickness of Strata.	
	feet	inches		feet	inches
Blue slate with threads of post...	180	10	Gray post (very hard) ...	4	11
Gray post ...	4	7	Very hard blue slate with several		
Gray post and slate girdles ...	10	6	bands of ironstone ...	14	6
Blue slate ...	21	4 $\frac{1}{2}$	Slate and ironstone ...	12	6
Very hard post and chert bands	7	0 $\frac{1}{2}$	Slate with several beds of iron-		
Ironstone band...	0	1	stone ...	9	0 $\frac{1}{2}$
Black slate ...	0	10	Blue slate ...	10	8
Very hard post and slate girdles	14	2 $\frac{1}{2}$	Quartz ...	0	6
Ironstone band...	0	1	Slate and post girdles ...	4	0 $\frac{1}{2}$
Hard blue post...	4	8	Post ...	6	2 $\frac{1}{2}$
Dark brown slate ...	44	11 $\frac{1}{2}$	Slate and post girdles ...	2	6 $\frac{1}{2}$
Dark blue slate...	21	1 $\frac{1}{2}$	Post and slate girdles ...	14	1
Pipeclay and chert rocks ...	0	8 $\frac{3}{4}$	Ironstone band...	0	2
Blue slate ...	7	9 $\frac{3}{4}$	Hard black slate ...	1	4 $\frac{1}{2}$
Pipeclay and chert ...	1	3 $\frac{1}{2}$	Gray post ...	6	5 $\frac{1}{2}$
Blue slate ...	43	4	Gray post (hard) ...	8	0
Blue slate with small beds of chert	23	0 $\frac{1}{2}$	Blue slate ...	14	1 $\frac{1}{2}$
Blue slate ...	16	0	Black coaly slate ...	2	0
Post extremely hard ...	2	10	Fire-clay ...	1	0
Blue slate ...	24	6 $\frac{1}{2}$	Blue slate with chert ...	1	0
Ironstone ...	0	3	Gray post with several beds of quartz	7	0
Dark brown slate ...	48	6 $\frac{1}{2}$	Dark brown slate ...	5	0
Dark slate with thin beds of blue			Very hard post...	4	1
slate ...	42	1	Ironstone band...	0	1
Blue slate ...	2	6 $\frac{1}{2}$	Post and slate girdles ...	8	11
Ironstone ...	0	3 $\frac{1}{2}$	Dark brown slate ...	1	4 $\frac{1}{2}$
Blue slate ...	27	2 $\frac{3}{4}$	Ironstone band...	0	1 $\frac{1}{2}$
Post and slate ...	5	6	Blue slate ...	11	3 $\frac{1}{2}$
Blue slate ...	5	0 $\frac{1}{2}$	Blue slate and ironstone bands...	11	2 $\frac{1}{2}$
Brown coaly slate ...	1	4	Soft chert rock ...	1	8 $\frac{1}{2}$
Soft blue post ...	0	4	Millstone grit ...	0	6 $\frac{1}{2}$
Ironstone ...	0	1 $\frac{1}{2}$	Brown slate ...	1	6
Hard blue post...	22	8 $\frac{1}{2}$	Brown slate and beds of post		
Dark blue slate...	9	0	and ironstone ...	18	11 $\frac{1}{2}$
Hard blue post...	2	6	Brown slate ...	10	2
Coaly slate ...	2	0	Ironstone band...	0	3 $\frac{1}{2}$
Coal (bright) ...	0	10 $\frac{3}{4}$	Brown slate ...	16	5 $\frac{1}{2}$
Post and slate girdle, very hard	3	8 $\frac{1}{2}$	Blue slate ...	5	10 $\frac{1}{2}$
Quartz ...	0	3 $\frac{3}{4}$	Black binds (very hard) ...	7	10 $\frac{3}{4}$
Quartzose sandstone ...	1	9	Slate and post girdles ...	12	3
Shale and post girdles ...	10	7 $\frac{1}{2}$	Slate and post girdles ...	13	2
Post ...	2	7	Blue slate ...	2	11 $\frac{1}{2}$
Account of this strata mislaid...	7	7 $\frac{1}{2}$			
Quartz and post mixed...	5	10			
				1,049	0

Mr. Coghlan's boring with the Diamond Rock Drill.

The gentlemen who are boring to prove coal on the Sutherland Estate, belonging to the Honorable Thomas Holt, near Botany, after reaching a depth of 2,193 feet were obliged to stop operations there, and have, under Mr. Coghlan's directions and superintendence, commenced another borehole on the beach and more to the eastward. At page 209 I annex sections placed in juxtaposition, showing the different strata bored through on the Sutherland Estate, Botany, and measurements taken by me in 1863 of the strata above and below the upper or No. 1 coal seam, 5 feet 6 inches to 6 feet in thickness, at Coal Cliff, about 17 miles south-west of the Botany borehole, from which it will be seen that the bottom of the hole (2,193 feet) appears likely to be in the gray rock which is the roof of the No. 1 or 6 feet coal at Coal Cliff, if the purple

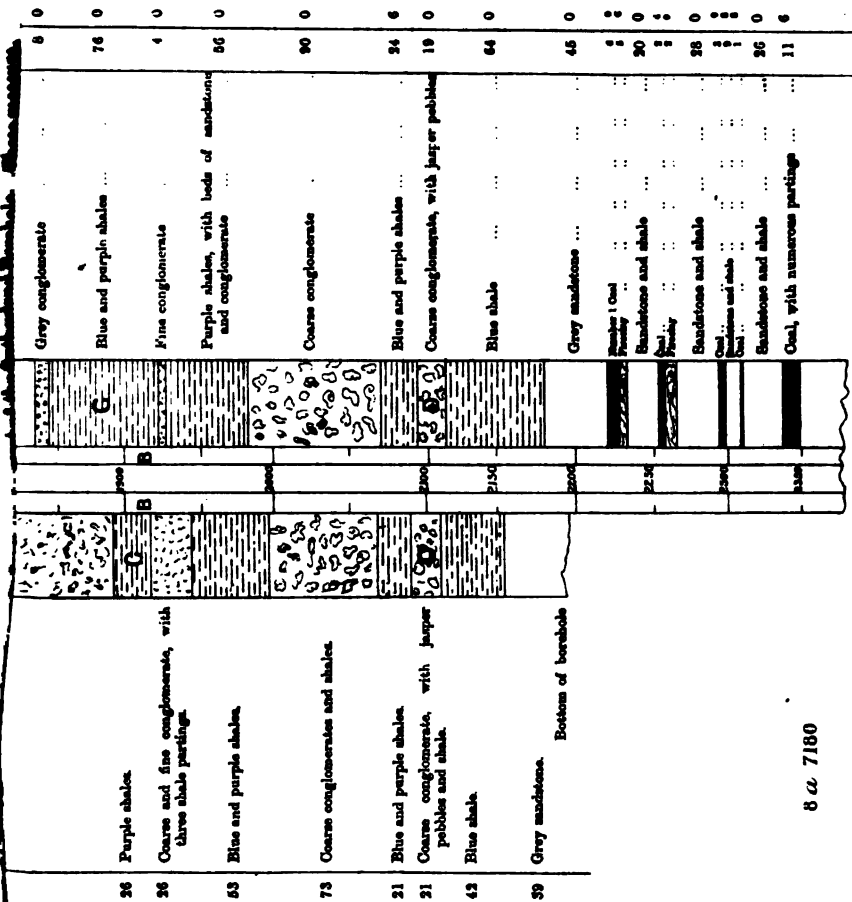


From an examination and measurement of the above Baring, and an inspection of the country between them and Tiggerah Beach, Chibog-tree, and Lake Macquarie, I am of opinion that this Borehole will have to go at least 2,000 feet (probably 2,600) before it reaches the strata in which the workable Coal seams are found, and that they are likely to be met with at that depth.

PHOTO-LITHOGRAPHED AT THE GOVT. PRINTING OFFICE.
SYDNEY, NEW SOUTH WALES.

Bolany and Coal Cliff Sections, placed in juxtaposition for comparison.

Section of the strata bored through, by the
Diamond Rock-drill, on the Honorable Thomas
Section of the strata lying over the No. 1 or
6 feet seam of coal at Coal Cliff, 17 miles south.



shales (lettered C) and the coarse conglomerate (lettered D) with jasper pebbles in it are identical with those which are over the coal at Coal Cliff. I believe that they are identical. The thickening which I anticipated there would be at Newington and Botany appears at the latter place to be principally between the bottom of the Hawkesbury sandstones and bottom of the UPPER purple shales (lettered A to B).

Thus, at Botany the distance between them is 1,229 feet (see A to B Botany section), whilst at Coal Cliff it is only about 636 feet (see A to B Coal Cliff section), i.e., about 593 feet more strata, consisting of sandstones, shales, and conglomerates have come in between the bottom of the Hawkesbury sandstones and bottom of the upper purple shales.

The thickening and thinning of the coal measure and other strata in certain directions is well known to take place in all countries. For instance, the Great Conglomerate, as it is called, in the United States Appalachian Coal Basin is said to be over 1,000 feet in thickness along its lower border, and thins off rapidly on the western outcrop to about 100 feet, and on its eastern outcrop to about 30 feet, whilst throughout their western coal fields it ranges from 10 to 15 feet.

The Moore Park borehole is now down 1,850 feet, and I am of opinion that it will have to go 2,200 feet at least before it will reach the strata (rock or shale) immediately overlying the No. 1 or 6-foot coal seam at Coal Cliff, and that no workable seam of coal is likely to be found before that depth.

Applications to Undermine Reserves.

During the year I have reported upon the following applications sent for my report, to mine for coal under reserves, &c., viz. :—At Tighe's Hill, Throsby Creek, Jarvis Bay, Lake Macquarie, Singleton, and Murrumbidgee.

Sydney International Exhibition.

I have collected and arranged for the trophy at the Exhibition sixteen sections of coal, cut out of the seams at work, which were supplied to me by the managers of the collieries, viz. :—

- 1st. From the Australian Agricultural Company.
- 2nd. " Co-operative Colliery.
- 3rd. " Ferndale Colliery.
- 4th. " New Lambton Colliery.
- 5th. " Newcastle Wallsend Colliery.
- 6th. " Newcastle Coal-mining Company.
- 7th. " Waratah Company.
- 8th. " Red Head Coal Company.
- 9th. " Osborne Wallsend Colliery.
- 10th. " Illawarra Coal Company.
- 11th. " Bulli Coal Company.
- 12th. " Lithgow Valley Coal Company.
- 13th. " Eskbank Colliery.
- 14th. " Vale of Clwydd Colliery.
- 15th. " Katoomba Coal Company.
- 16th. " Boghead Mineral, from the New South Wales Shale Oil Co.'s Mine.

The Coal Cliff Coal-mining Company sent a section, cut out the whole height of their seam, 6 feet in thickness, which was exhibited in the Exhibition building.

J. J. O. Atkinson, Esq., also sent a section, cut out of his coal seam at the Cataract Creek Mine, near Berrima, which was also exhibited in the building.

Blocks of Coal.

Blocks of coal, 18 inches square, were also collected, and exhibited in the building, from all the principal collieries in the Northern, Southern and Western Districts.

In conclusion, I have only to add that there were thirty-seven collieries under inspection, against thirty-three in the preceding year, and that this year's returns show an increase in the Southern district of 28,465 tons of round and small coal raised, valued at £12,674; an increase in the Western District of 24,133 tons, valued at £9,940; and a decrease in the Northern District of 44,715 tons.

I have, &c.,

JOHN MACKENZIE, F.G.S.,
Government Examiner of Coal Fields

THE HALF-YEARLY REPORT of the Inspector of Collieries on the state of the various Collieries in New South Wales, and Accidents therein investigated by the Inspector for the half-year ending 31st December, 1879.

The Examiner of Coal Fields, Newcastle,—

Sir,

Lambton, 12 January, 1880.

In compliance with clause 26 in the Collieries Regulation Act, 1876, I have the honor to transmit to you this my half-yearly report on the state of the various collieries under inspection in the several districts of the Colony during the half-year ending 31st December, 1879.

Five small coal-mines have been added to the number under inspection and one coal-mine stopped in the Northern District during the six months. One of those started is situated near the Ferndale Colliery, another near East Maitland, another near Mount Wingen, another at Lake Macquarie, and the other on the New Lambton Estate. The one stopped is the Australasia Colliery, making twenty-six mines for the Northern District.

The number of mines under inspection is the same in each of the other districts as given in my last half-yearly report.

Number of mines in each district, viz. :—

Northern District.....	26 coal mines				
Southern " 	4 "				
Western " 	5 "		and 1 shale mine.		
Berrima " .....	...		1 "		
	35 "		2 "	=	37 mines.

PRESENT STATE OF THE MINES.

Although the following shows that in some few of the collieries there is room for improvement as regards the distribution and circulation of the air currents through the workings in the mines, still, on the other hand, I am glad to be able to report that the main air currents are now fairly maintained throughout.

A. A. Company.—About 80,000 cubic feet of air per minute is sent into the mine for about 600 men and horses employed therein. Complaints have been made of the defective distribution and circulation of the air through some of the workings, to which defect the manager's attention has been called. The law is carried out in other respects.

N. C. M. Company.—About 235 men and horses are employed in the mine, and about 47,000 cubic feet per minute of air is introduced into the pit. The provisions of the law are complied with in other matters as well.

Ferndale.—About 15,000 cubic feet of air per minute is introduced into the mine for about 130 men and horses employed therein. The provisions of the Act are carried out in other matters also.

New Lambton.—The working of the colliery has been subject to great interruptions arising from various causes of late, which amongst other inconveniences necessitated the overcrowding of those parts of the mine to which work was restricted. Still the men and masters pulled together without much complaint. About 20,000 cubic feet of air per minute is introduced into the mine for about 200 men and horses employed therein.

Lambton.—About 100,000 cubic feet per minute of air is introduced into the mine for about 430 men and horses employed therein. The provisions of the law are carried out in other matters as well.

Waratah.—About twenty-five miners are still employed in two tunnels, mostly removing pillars, &c. No cause of complaint.

Goose Colliery.—Only two or three miners employed getting house coal, &c. No cause of complaint.

Ferndale No. 2.—Only two miners working on their own account getting house coal, &c., on the very boundary of the Ferndale Colliery. No cause of complaint.

Dog's Rot.—Two miners getting house coal on their own account on the New Lambton Estate. No cause of complaint.

Wallsend.—About 40,000 cubic feet of air per minute is sent into the B pit for about 240 men and horses employed therein; and about 30,000 cubic feet per minute into the tunnel for about 230 men and horses employed. The provisions of the law are complied with in other matters also.

Co-operative.—About 45,000 cubic feet of air per minute is introduced into the mine for about 400 men and horses employed therein. The law is carried out in other respects also.

Duckenfield.—About 200 men and horses are employed in the mine, for whom about 23,000 cubic feet of air per minute is provided. No cause of complaint.

Brown's Colliery.—About 30,000 cubic feet of air per minute is introduced into the mine for about 170 men and horses employed therein. The law is complied with in other respects as well.

Alnwick.—About thirty-five men and horses are employed in the mine, and about 4,000 cubic feet of air per minute is sent into the mine. No cause of complaint.

Raithuba.—The colliery is now under the viewership of Mr. James Fletcher, and about twenty-five miners and wheelers are employed therein. No cause of complaint.

Tulip's.—Only two or three men at work getting house coal. No cause of complaint.

Mitchell's.—Only two or three men employed getting house coal, &c. No cause of complaint.

Bloomfield.—Only one miner employed besides the lessee himself getting house coal, &c. No complaint.

Mount Enterprise.—The two lessees are getting house coal, &c., themselves only. No cause of complaint.

Anvil Creek.—About twelve miners employed in the mine driving the main drift. No cause of complaint.

Greta.—About 15,000 cubic feet of air per minute is introduced into the mine for about 140 men and horses employed therein. The provisions of the law are enforced throughout.

Singleton.—Above fourteen miners and wheelers are employed in the mine. Although the quantity of air sent into the mine could scarcely be measured, still the mine is fairly ventilated. No complaint.

Rix's Creek.—Only a few tons of coal per week is worked by the lessee himself. No complaint.

Wingen.—Only the two lessees themselves employed opening the old mine. No complaint.

Raspberry Gully.—About 50,000 cubic feet of air per minute is sent into the mine for about 160 men and horses employed therein. The provisions of the law are enforced in other matters also.

Morrisett.—One or two men employed mostly in getting coal for the steam dredge, &c., on Lake Macquarie. No cause of complaint.

Bulli.—About 25,000 cubic feet of air per minute is introduced into the mine for about 215 men and horses employed therein. Although the main air currents are fair, yet the distribution and circulation of the air through the workings of the mine are rather defective, and the manager of the colliery fully notified of such defect. No other cause of complaint. About twelve miners are employed in the new tunnel driving exploring headings, &c.

Osborne, Wallsend.—About 14,000 cubic feet of air per minute is sent into the mine for about 112 men and horses employed therein. No cause of complaint.

Mount Pleasant.—About 13,000 cubic feet of air per minute is sent into the mine for about 126 men and horses employed therein. This shows that the promised improvement in the ventilation of the mine alluded to in my last half-yearly report has been effected. No cause of complaint.

Coal Cliff.—About 9,000 cubic feet of air per minute is sent into the mine for about seventy miners and wheelers employed therein. The miners are not paid by weight for the coal they get. No other cause of complaint.

Vale of Clwydd.—About 10,000 cubic feet of air per minute is sent into the mine for about forty-seven men and horses employed therein. The provisions of the law are enforced in other matters also.

Eskbank.—About 9,000 cubic feet of air per minute is sent into the mine for about forty-five men and horses employed therein. No complaint.

Lithgow Valley.—About thirty-nine miners and horses are employed in the mine, and about 4,000 cubic feet of air per minute provided for them. No complaint.

Bowenfels.—The mine is working rather irregularly, and only about seven miners, &c., employed, for whom about 4,000 cubic feet of air per minute is sent into the mine. The miners are not paid by weight for the coal they get. No other cause of complaint.

Cooverwull.—Only one man employed, less than half time, getting coal for the Cloth Factory steam engine. No cause of complaint.

Hartley Shale.—About 14,000 cubic feet of air per minute is sent into the mine for about 126 men and horses employed therein. No cause of complaint.

Joadja Shale.—About forty men are employed in the mine, and the ventilation supplied is fair, although it can scarcely be ascertained. No cause of complaint.

Accidents in the Mines.

It is very satisfactory to be able to repeat here a statement made in my previous report to the effect that both colliery owners and managers continue most scrupulously to provide the miners with the necessary quantity and kind of props, &c., wherewith to secure their workings. It fell to my lot to investigate and report only one accident resulting in serious bodily injury to one person during the last six months, which happened to a miner named William Peters, whereby he lost his leg by a fall of coal in the Duckenfield Colliery, on the 25th July. I have also investigated several slight cases of accidents which could by no means be considered serious.

Having only one serious accident to report, as stated and described above, I trust it may not be considered out of place my not furnishing the usual "tabulated list," &c.

I have, &c.,

THOMAS LEWIS,

Inspector of Collieries.

REPORT OF GEOLOGICAL SURVEYOR IN CHARGE.

REPORT OF PROGRESS OF THE GEOLOGICAL SURVEY DURING THE YEAR
1879.

DURING the past year (1879) the undermentioned localities have been examined by the Geological Survey:—

Hill End and Tambaroora Gold-field, Moss Vale, Jordan's Crossing, Mittagong, Prospect and Pennant Hills, Silver Mines at Boorook, Milburn Creek, Major's Creek, and Upper Shoalhaven District, Sebastopol and Junee Gold-field, Silver Mine at Moruya, Araluen and Braidwood Gold-fields, Bingera Gold-field, Walcha, Bendemeer, Uralla, Tenterfield, Tinbarra Gold-field, Cangai Gold-field, and Clarence District, Burrangong and Blind Creek, Scrub Yards or Baker Gold-field, Fish River Caves, and Wambian Caves.

The survey of the Hill End and Tambaroora Gold-field has been made by Mr. E. F. Pittman, L.S. It embraces an area of $19\frac{1}{2}$ square miles, which includes all the principal lines of reef that have been worked on this gold-field.

These reefs run in a meridional direction. They traverse silurian conglomerates, sandstones and shales which have been more or less metamorphosed. The conglomerates, which contain obscure impressions of encrinites and other fossils, have been altered into a hard crystalline rock, scarcely distinguishable in places from a true porphyry; hence this altered rock has been erroneously described by some observers as an igneous rock.

The shales have a very fissile cleavage structure. With the exception of an outlier of basalt forming the Bald Hill, the whole formation of this district consists of these rocks traversed by quartz reefs.

But the payable gold-bearing reefs occur only within a narrow belt of country, about 6 miles in length and 1 mile wide, where the strata dipping to the east and to the west form a "saddle" or anticline, the axis of which with a slight depression in one place extends from the Turon River through Hawkins Hill to Tambaroora, where it suddenly terminates by the strata turning and dipping towards the north.

The occurrence of these reefs only in the strata of this anticline is a very significant feature. It suggests that the gold-bearing veins are confined to a certain set of beds. If this be the case, and all the mining operations hitherto carried out seem to show that it is so, then we have here a most important guide for future prospecting, for the reefs in the non-auriferous country will be avoided.

On Hawkins Hill, in the Star of Peace claim, payable gold-bearing quartz has been worked at a depth of 770 feet.

The reefs are not always continuous, but some occur as isolated lenticular veins, or "bunches," from which we may infer that the mineral contents of the veins have not been injected from below, or filled in from above, but have crystallized in the fissures from mineral solutions infiltrated from the bounding rocks, thus showing that these rocks are the source of the metals in the veins, and affording evidence in confirmation of the view that the payable reefs on this gold-field are only associated with a certain set of beds. It is believed that the vein fissures are chiefly the result, not of the violent disturbances which bent and folded the strata into anticlines and synclines (though some metalliferous lodes have been formed in rents produced by such causes), but of the contraction of the rock mass, whereby cracks slowly opened wherever the rock most readily yielded. As the rocks frequently vary in composition, we should not expect to find the fissures always continuous, but sometimes disconnected and irregular in extent, in fact resembling the shrinkage cracks in a piece of wood of variable grain, hence the occurrence of those isolated lenticular veins. Considering therefore the nature of the formation of these reefs, there is every probability that many veins and so-called "bunches" exist, which do not appear at the surface. These should be sought for by driving or boring

into the beds forming the narrow belt of country above referred to, of which there is a large extent not yet prospected. I therefore anticipate the discovery of many payable reefs on this gold-field.

There is yet much to be learned respecting the modes of occurrence of the precious metal—its association with mica veins, pyrites, &c., and why certain portions of the veins should be immensely rich in gold,* and other portions poor. Further researches are needed, and in pursuing these the miner and the scientist must work together and render each other mutual assistance.

The alluvial deposits that have been worked consist of the Recent and Post Tertiary deposits along the course of the creeks, and the surfacing on the hills where the beds of the anticline crop out. When we leave the outcrop of these beds the alluvial deposits cease to be payable; it is evident then that the gold has been derived from the degradation of the reefs traversing these beds. Except in a few instances, the alluvial deposits cannot be further worked with profit by the ordinary methods; but no doubt much of the surfacing on the hills could be profitably reworked by hydraulic appliances.

Mr. Pittman's survey, which has been made with great accuracy, and the accompanying carefully prepared plans and sections of the quartz mines, by Mr. T. S. Parrot, C.E., will give much useful information regarding the auriferous reefs in this gold-field.

Following the road from Bathurst to Hill End, the first 8 miles is over granite, then Silurian schists to near Wyagdon, then granite again for about one mile and a-half, to near Wattle Flat, where the formation is diorite and altered Silurian with highly auriferous quartz veins.

These rocks continue to Sofala on the Turon River, and for 3 miles beyond; then we have Silurian schists with occasional massive beds of metamorphosed conglomerate, to Hill End. Near Monkey Hill and at the head of Sally's Flat occurs basalt capping Tertiary gravels; the latter are reported to have yielded diamonds, just as the Tertiary drifts of Cudgegong and Bingera have done. The basalt of Bald Hill, near Hill End, contains much olivine and corundum; it is probably a remnant of the flow of which the basalt on Monkey Hill formed a part.

In connection with applications to mine on reserves, I inspected some of the coal formations on the Great Southern Railway. Near Jordan's crossing, at the head of a ravine falling into the Shoalhaven, a good section is exposed showing the Hawkesbury sandstones resting directly upon a coal seam. The upper surface of the coal seam is undulating, showing that it has been worn into hollows before the deposition of the Hawkesbury beds. The seam varies in thickness. Some years ago it was worked by an adit; at this point I measured the following section.

False-bedded Hawkesbury sandstone with undulating under surface resting on—

	feet.	inches.
Coal...	0	9
Band	0	$\frac{3}{4}$
Coal...	0	$9\frac{1}{2}$
Band	0	$\frac{1}{2}$
Coal...	0	4
Inferior coal	0	2
Clay band	0	3
Coal...	0	9
Coal with partings...	0	3
Coal...	0	7
Coaly shale...	0	6

Total thickness of coal, with bands resting on fireclay shales ... 4 5 $\frac{3}{4}$

In another section the seam is 5 feet 9 inches thick. The coal is of a semi-bituminous character. Below this are exposed about 40 feet of sandstones and shales, with thin coal seams.

* Some exceptionally rich patches in the reefs have yielded as much as 2,100 ozs. of gold per ton.

1. The first step is to identify the problem or question that needs to be answered.

2. The second step is to gather relevant information and data.

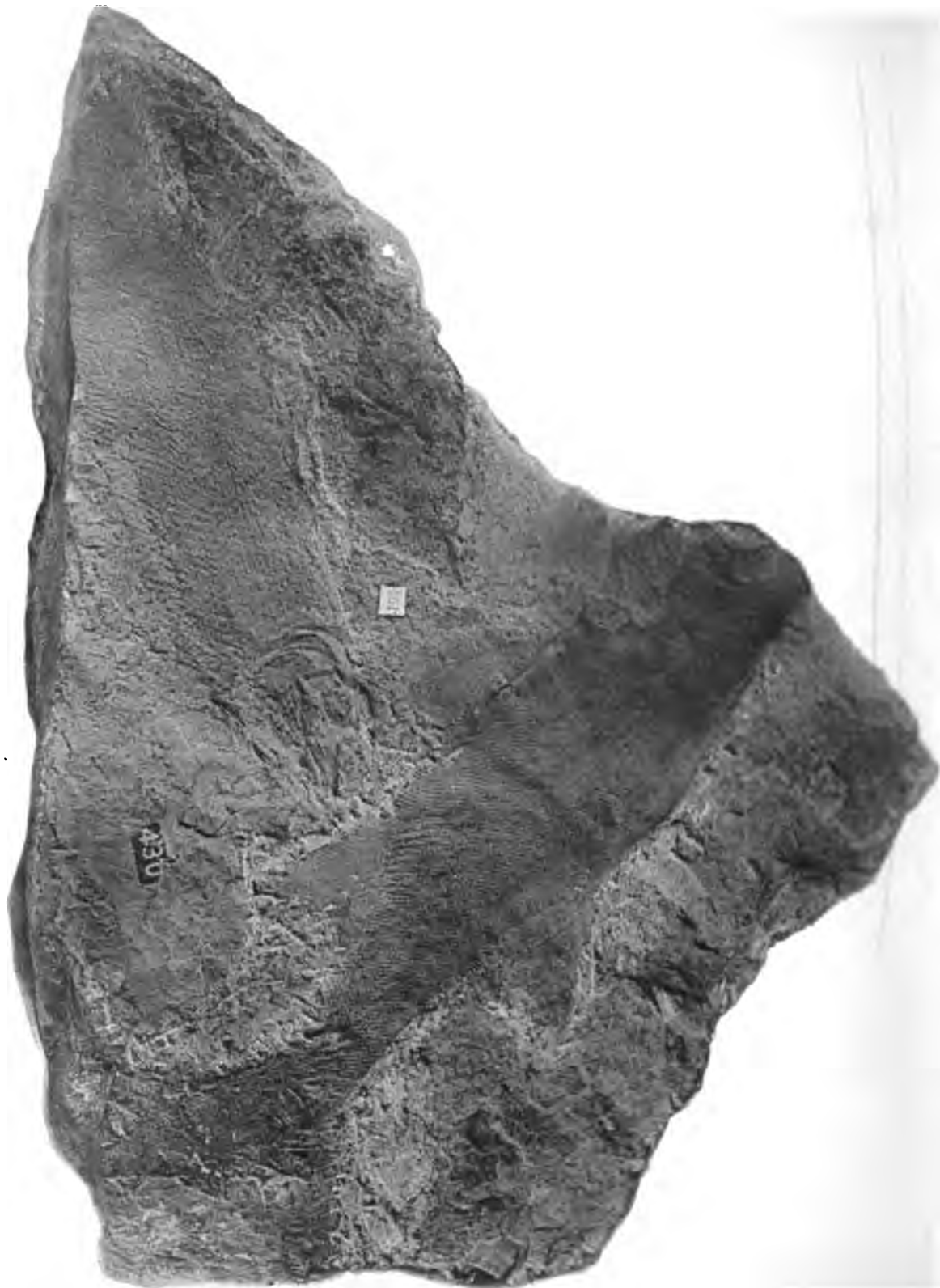
PLATE V.

DEPARTMENT OF MINES, NEW SOUTH WALES.



ARVID NILSON, DEL.

MACROTÆNIOPTERIS WIANAMATTÆ
(FEISTMANTEL.)



PALAEONISCUS ANTIPODEUS.

(EGERTON.)



- A Red surface soil.
- B Wyananetta Shales.
- C Intrusive Dykes of Trachyte.

The shales are full of *phyllothea* and *vertebraria* stems, the latter are sometimes embedded in a position perpendicular to the plane of stratification. Other seams of coal and kerosene shale may possibly occur at a greater depth in these coal measures. About 10 miles further to the north, in Black Bob's Creek, a similar section to the above is shown. The Hawkesbury rocks overlying the coal measures in this district are from 300 to 400 feet thick.

To the eastward the Hawkesbury rocks are overlaid by the Wianamatta beds, which in places are capped with basalt.

The Wianamatta beds here reveal an important geological feature connected with some of the coal deposits. In one of the railway cuttings between the Mittagong Station and the Gib Tunnel may be seen several intrusive dykes of trachyte penetrating the Wianamatta shales. The following is a sketch of one of the sections exposed.

These dykes are off shoots from the great mass of trachyte and porphyry which forms the high range on the south side of the railway line. From the manner in which this intrusive rock is seen in the above section to have penetrated the shales both laterally and vertically, it must have been injected in a highly heated and semi-fluid condition. It is no doubt due to the intrusion of this trachytic mass into the coal measures that the seams of coal in the vicinity of it owe their anthracitic character.

It is generally found that coal which has been affected by trap dykes contains a large amount of sulphur. It is questionable therefore whether the coal in the immediate vicinity of Mittagong will be suitable for smelting purposes.

On Middle Creek, about 6 miles from Mittagong, the coal is of a more bituminous character, but I am not aware whether an analysis of it has been made. I am of opinion that in this locality a coal suitable for smelting will be found available for the rich ironstone of Fitzroy.

This ironstone occurs at the junction of the Wianamatta and Hawkesbury formations. It is evidently a local spring deposit.

From the dark blue shales at the Gib Tunnel, I lately collected some good impressions of the *Macroteniopteris Wianamattæ* (see plate V), and Mr. P. F. Adams, Surveyor General, obtained a fine specimen of the *Palæoniscus Antipodeus* (see plate VI).

In July I inspected the road-metal quarries at Prospect and Pennant Hills, near Parramatta. At Prospect the rocks consist of an isolated hill of diorite and basalt, standing like an island in the midst of the Wianamatta formation. At Pennant Hills the rocks quarried are dense basalt and trap breccia, affording a good road-metal. As these are the nearest localities to Sydney where the blue metal can be obtained in unlimited quantity they must yearly become of increasing importance for the supply of the city and suburbs. My report upon these quarries is herewith appended (Appendix A).

Mr. H. D. Mackworth was temporarily appointed to the vacancy caused by Mr. Lamont Young's resignation. After assisting Mr. Pittman in surveying the Milburn Creek Copper Mine, Mr. Mackworth was dispatched to examine the Elrington Gold-field, to ascertain the best means of supplying water for mining purposes to the Major's Creek Diggings. The result of the surveys made has already been communicated to you (see Appendix B).

Mr. Lamont Young having again offered his valuable services to the department, was re-appointed in October, when he was instructed to report upon certain lands in several of the Southern Gold-fields. Mr. Young's observations upon the geology of the country examined by him, including his report upon the Scrub Yard's Rush, are given herewith in Appendix C.

About the same time Mr. Pittman proceeded to the New England Districts to report upon applications for the alienation of lands within gold-fields. The general geological features of the country over which he passed were also noted (see Appendix D).

On his return from New England, Mr. Pittman inspected some portions in the Burrangong Gold-field, and the Blind Creek Diggings near Murrumburrah, where he recommended a Gold-field reserve to be made.

In consequence of the absence of Professor Liversidge from the Colony, I was deputed, at the request of the Registrar of the University of Sydney, to deliver two courses of lectures on physical geography and geology to the 2nd-year and 3rd-year students during the Lenten term, from the 4th March to the 15th May.

The Government having purchased the collection of rocks, fossils, and minerals, geological maps, and library of the late Rev. W. B. Clarke, they were duly delivered to this Department in August. Many of the fossils are those which have been described and figured by Professor De Koninck of Liege, and as these are of special value for reference, I selected from them most of the typical specimens for the palæontological collection which is at the present time exhibited in the Court of the Department of Mines at the Garden Palace. Mr. Clarke's geological map of the Colony is now being prepared for publication.

A large and comprehensive collection of minerals, rocks, and fossils from the Museum of Mines has been prepared for the Sydney International Exhibition.

The minerals have been arranged with the view of representing the nature of the vast and varied mineral resources of the Colony. They have been grouped as follows:—

Alluvial and reef gold.

Auriferous quartz.

Argentiferous ores, including a large collection of specimens from the Boorook Silver Mines, made by the Boorook Exhibition Committee.

Copper ores.

Tin ores, including many fine specimens of crystallized cassiterite from the Bolitho lode, Cope's Creek.

Iron ores.

Coals.

Marbles, polished and rough.

Lead and antimony ores.

Gem stones.

Asbestos, &c.

Blocks of coal 18 inches in diameter are also exhibited from most of the collieries. In addition to these, sixteen of the coal mining companies have sent from the Northern, Southern, and Western Coal Fields vertical sections of coal showing the actual thickness of the seams worked. The vertical sections have been grouped according to the respective coal-fields which they represent, and arranged so as to form the base of the gold trophy. This trophy is in the form of a pyramid, which represents in bulk the quantity of gold raised in Australasia. Quantity, 2,157 tons 16 cwt. 1 quarter and 26 lbs. Value, £274,446,310.

The collection of rocks consists of specimens of the principal sedimentary, metamorphic, and igneous rocks found in New South Wales.

The palæontological collection comprises the characteristic fossils illustrative of the principal sedimentary formations of New South Wales.

The formations have been grouped in the following order:—

Post Tertiary.	Recent.	{ River gravels, sand dunes, and other deposits in course of formation.
	Post Pliocene.	{ Terrace-drifts in valleys; deposits of loam, sand, and gravel, forming alluvial flats and plains in Riverina, &c.
Tertiary or Cenozoic.	Pliocene.	Auriferous deep leads at Gulgong, Parkes, &c.
	Miocene.	Leaf-beds of New England, Dalton, &c.
Secondary or Mesozoic.	Jurassic.	Clarence River series.
	Triassic.	Wianamatta and Hawkesbury series.
	Permian.	Upper Coal Measures.
Primary or Paleozoic.	Carboniferous.	Lower Coal Measures and Stroud series.
	Devonian.	Mount Lambie and Murrumbidgee series.
	Silurian.	Yass series.

There are exhibited—the mineral map of the Colony, together with maps of the Gold-fields, Tin-fields, and Coal-fields; sections of the coal measures and of the coal seams; and geological maps.

10



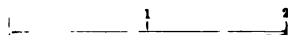
DIPROTODON AUSTRALIS,

(OWEN.)

LOWER SIDE OF FIRST INCISOR, UPPER JAW.



Scale of inches.



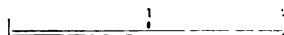
DIPROTODON AUSTRALIS.

(OWEN.)

UPPER OR ENAMELLED SIDE OF FIRST INCISOR, UPPER JAW.



Scale of inches.



DIPROTODON AUSTRALIS.

(OWEN.)

INNER SIDE OF FIRST INCISOR, UPPER JAW.

The Department of Mines also exhibits a large and valuable collection of the timbers of the Colony, comprising 320 specimens, in pieces 3 feet long and 4 inches thick. These show the whole width of the tree with the bark on, and one side of each piece has been French polished.

Besides the above-mentioned collections, the Department of Mines, at the request of the International Exhibition Commission, undertook to provide for the display of the mineral exhibits of private persons.

An interesting discovery of gold in serpentine rock and associated with asbestos was made in August by the Gundagai and Melbourne Asbestos Company, at the Company's mine on Jones Creek, near Gundagai. Some fine specimens of the asbestos, in its natural state and also prepared, and of the gold in serpentine, are exhibited in the Garden Palace. A crushing of 20 tons of this auriferous rock yielded at the rate of 2 ozs. of gold per ton. I regard the discovery as an important one in connection with the various modes of occurrence of gold. It is not improbable that nuggets of gold occur in such rock in the same manner as masses of native copper sometimes do.

Amongst the recent additions to the geological collection of the Museum of Mines are some large fragments of bones of the *Diprotodon*, which were presented by Mr. G. A. Brooks, who found them 15 feet from the surface in excavating for a tank, in a gully between two ranges on his Conipara Station in the Murrumbidgee District.

Two fragments of the two front upper incisors of the same extinct gigantic marsupial have been presented to the Museum by Mr. John Roper, Inspector of Stock, who obtained them about 12 miles from Merriwa. These are amongst the largest incisors of this animal yet found; the skull to which they belonged must have measured between 3 and 4 feet in length. One specimen is figured in plates VII and VIII.

Smaller teeth of the *Diprotodon* have also recently been obtained on the high lands near Glen Innes, by Mr. W. Bede Christie, Mining Surveyor.

In December Mr. Lamont Young inspected the Fish River caves and the Wambian caves, and recommended certain improvements to be made in them for the preservation of the caves and the convenience of visitors.

The improvements are now being made at the Fish River caves, Messrs. Baynes & Co. being the contractors for the same. Mr. Young's report upon the Wambian caves is given in Appendix E.

The report upon the Fish River caves has already been published in the Tourists Railway Guide.

In a boring recently put down near the Newcastle Harbour, by Mr. Jesse Gregson, Manager of the Australian Agricultural Company, the main seam of coal, 17 feet 8 inches thick, was pierced at a depth of 272 feet. (See Appendix F.)

In Appendix G is a list of the contributors to the Museum of Mines during the year 1879.

The mineral and geological collection of this Museum now numbers 14,720 specimens.

I have, &c.,

C. S. WILKINSON,

The Under Secretary for Mines.

Geological Surveyor in Charge.

APPENDIX A.

Report on the Road-metal Quarries at Prospect and Pennant Hills.

Sir, Department of Mines, Geological Survey Branch, 7 August, 1879.

In accordance with the request of the International Exhibition Committee for the Parramatta District, and with the permission of the Hon. the Minister for Mines, I have inspected the large quarries at Pennant Hills and Prospect, near Parramatta.

The town of Parramatta is situated on the boundary of the Wianamatta shale and the Hawkesbury sandstone formations.

The Wianamatta formation here contains thick beds of dark-gray fire-clay shales, from which bricks are extensively manufactured at the Parramatta Junction Brick and Pottery Co.'s Works, and the surface clay resulting from the decomposition of the shales affords in numerous places throughout the Parramatta district first-class material for brick-making.

The soil derived from the Wianamatta beds is clayey, and appears to be somewhat deficient in lime, but when deeply worked and well tilled is suitable for agricultural purposes, especially for the culture of certain kinds of fruit, as is evidenced by the magnificent orangeries in the vicinity of Parramatta.

The Hawkesbury formation is chiefly noted as affording massive beds of sandstone. The fine-grained texture and light colour of this sandstone render it admirably adapted for building purposes, for which it is largely used.

Penetrating these formations are dykes and masses of igneous rock, varying from a dense basalt to a coarse-grained hornblendic greenstone. At Prospect these rocks form a conspicuous and irregularly-shaped hill, which attains an elevation of 430 feet above sea level; and from its summit, near Graystones (the residence of Mr. Wentworth), a very commanding view is obtained of the surrounding country, embracing the City of Sydney, Parramatta, Liverpool, Campbelltown, and the Blue Mountains.

On the south side of this hill a large quarry has been opened, immediately adjoining the site of the proposed large reservoir for the Sydney Water Supply. This quarry has been abandoned, as road metal can now be obtained nearer to Parramatta, but the rock on it being less jointed and more uniform in texture than that in any of the other quarries in the district could be hewn in large blocks, and would be suitable for making into slabs for paving-stones.

For this purpose samples of the stone should be obtained, for I am of opinion that as regards cost of production and durability it might successfully compete with the basalt flag-stones imported from Melbourne, though the stone from Prospect is somewhat the harder of the two. On the west side of Prospect Hill, on the Lawson Estate, and also on the north side of the hill, in a small Reserve, some dense basalt is being quarried yielding good road metal; it occurs in unlimited quantity.

This quarry is situated only about 2 miles from the Great Western Railway, to connect it with which the intervening country would offer no engineering difficulties for the construction of a branch line or tramway; and yet at present the metal has to be carted for a distance of 5 or 6 miles over a hilly road.

The basalt rock of Prospect Hill will undoubtedly be required in the future for the principal supply of metal for the western suburbs of Sydney. Mr. Wentworth informs me that basalt of similar quality occurs nearer to the railway line, between the railway and Prospect Hill, but it is on private property.

The Pennant Hills quarry is situated about 3 miles to the north-east of Parramatta, and 2 miles in a direct line north from the navigable water of the Parramatta River. It is an immense excavation from which road metal is said to have been taken for over fifty years. The rock consists of a dense but jointed basalt, containing small fragments of other rocks and some huge masses of coaly shale, from which it would appear that this spot is the site of an ancient volcanic point of eruption.

These patches of inferior rock cause a considerable amount of waste, but as they can be readily avoided they do not much obstruct the working of the quarry.

The stone is hand-broken at the quarry and carted to the Pennant Hills Wharf, on the Parramatta River, whence it is conveyed by water to Sydney and some of the suburbs.

The construction of a tramway from the quarry to the river would greatly reduce the cost of carriage, which at present amounts to 2s. 3d. per ton. This tramway has, I understand, been already proposed by Mr. Bennett, Commissioner for Roads.

In the same locality, and between it and Prospect, I have no doubt but that other occurrences of basalt now hidden by a thick covering of soil will be discovered. Yet the trap rock of Pennant Hills and Prospect being the main masses of the igneous rocks in this district will form the two principal sources of road metal for Sydney and the suburbs; and as municipal improvements are everywhere rapidly increasing, it is a matter of urgent importance that greater facilities than those now existing for supplying road metal should without delay be provided, whereby considerable advantages, other than in a monetary point of view, must accrue not only to the Parramatta district but more especially to the city of Sydney and its immediate environs.

In reference to the representation of these economic mineral resources of the Parramatta district at the International Exhibition, I would suggest that samples be exhibited of the (a) Wianamatta shale and clay, about 1 cwt., with bricks, &c., manufactured therefrom; (b) samples of sandstone dressed and ornamentally worked; (c) blocks of stone, one foot cube, and sawn samples of it to show its adaptability for paving-flags, from the old quarry at Prospect; (d) samples of road metal hand-broken and machine-broken from the quarries at Prospect and Pennant Hills; (e) accompanied by a general map of the Parramatta district, drawn on a scale of 20 chains to an inch, indicating the localities of the abovementioned exhibits, &c., and giving statistical information as to the amount and cost of the stone annually obtained from these quarries.

I beg to offer my thanks for the courtesy and kind assistance given me during my inspection by Mr. C. Watt, Mr. F. Wentworth, Mr. J. Taylor, and Mr. Cox.

I have, &c.,

C. S. WILKINSON,

The Under Secretary for Mines.

Geological Surveyor in charge.

APPENDIX B.

Report on Water Supply to the Elrington Gold-field.

Sir, Department of Mines, Geological Survey Branch, 7 November, 1879.

I have the honor to submit the accompanying report, by Mr. H. D. Mackworth, on the water supply for the Elrington Gold-field.

I have examined the principal part of the district surveyed by Mr. Mackworth. The extent of auriferous country in this gold-field is about 6 miles wide and 11 miles in length, stretching in a north-westerly direction from Araluen. It includes a portion of the high dividing range which forms the watershed between the Araluen Valley and the Shoalhaven River.

Almost on the top of the watershed are the Elrington or Major's Creek Diggings, where it is desired to take the water to. A large extent of alluvial mining, besides reefing, has been done here, and the alluvial deposits are still being worked whenever the small supply of water obtainable admits of it.

It is believed that the ground, which is scarcely payable to work at present, as well as much of that which has already been worked, will, with a larger water supply, afford remunerative employment to miners. The geological formation is hornblende granite traversed by very pyritous gold-bearing quartz veins and occasional belts of diorite. The alluvial deposits are of a loose sandy nature, and may be easily operated upon by sluicing appliances.

I may state that a considerable portion of the auriferous ground on this gold-field is on private property, being in the Jembaicumbene Valley; but the area to be benefited by the proposed water supply consists chiefly of unalienated lands.

The lowest gap on the watershed above-mentioned is at the head of Major's Creek, and within a mile from the township of Elrington. This gap, known as the Long Flat Gap, is about 180 feet above the level of the nearest point of the Shoalhaven River.

To bring water by gravitation from the Shoalhaven River on to this gap it would be necessary, owing to the slow rise in the river, to take the water by a race 45 miles in length from a point so far up and near the head of the river that a sufficient supply could not be obtained, even if it were augmented by diverting other available streams into it.

It appears that the only means of obtaining a sufficient supply of water by gravitation would be to take it from the Oronnear Creek. But this stream unfortunately flows into the river on the opposite or west side of the river, and to bring water from it the Shoalhaven Valley would have to be crossed either by a flume at a height of nearly 400 feet above the river or else by an inverted siphon pipe; the former plan would manifestly be impracticable, and the latter too costly and otherwise objectionable, for about 13 miles of heavy piping would be required.

Another scheme presents itself, viz., to pump water from the Shoalhaven River, at its junction with Back Creek, for a distance of about 5 miles up the Back Creek Valley on to the Long Flat Gap.

But there are obvious objections to a pumping scheme as well as to that necessitating the use of an inverted siphon.

I am of opinion therefore that, for the advantages to be derived, the Shoalhaven River, as a source of supply, will have to be relinquished. This is the more to be regretted, as there are no other permanently running streams in the district which would be available for our purpose, so that recourse can only be had to the conservation of storm water in reservoirs.

Suitable sites for two reservoirs are described in Mr. Mackworth's report. I have examined these sites; but the method of construction recommended for the proposed dams might be modified, yet not so as to materially alter the estimate of cost stated. I think the dams should be entirely of earthwork, instead of earthwork backed by wooden piles.

The reservoir or Digger's Dam which it is proposed to enlarge will cost about £1,450, and will contain 65,000,000 gallons; the dam on the Woolshed Creek is estimated to have nearly the same cost, and its capacity 76,000,000 gallons. On Back Creek, above the Digger's Dam, another reservoir of about the same capacity might if necessary be made. Back Creek does not flow all the year round, but the rainfall over the catchment area of the dams would be sufficient to fill them frequently during the year; thus, if we take only one-third of the annual rainfall for 1878 (which was a dry year) over the catchment area of the Digger's Dam it would amount to 2,214,000,000 gallons. The bottom of the Woolshed Dam would be 127 feet above the level of the Long Flat Gap, and the Digger's Dam is 111 feet above the same point; the dams are near to each other, and the distance between them and the Gap is about three quarters of a mile. From the Digger's Dam water is at present brought by race on to the Major's Creek Diggings.

The Long Flat Gap being on the dividing ridge commands the falls to the old workings on the Long Flat, and also the falls to the east into Major's Creek, which creek after joining Bell's Creek flows through Araluen.

I would not advise, however, the making of a service reservoir on the Gap, but only the construction of the two above-mentioned dams, which would together cost £3,200, inclusive of the purchase of land required.

The miners might themselves convey the water, as they now do, by race from the dams, and the supply to them, at a low cost, should be regulated by a keeper or man in charge.

I have no doubt that after the alluvial deposits have been worked out the development of the reefs in the district will necessitate the supply of water which these reservoirs would afford. Apart from the direct revenue to be derived from the water rates, indirect advantages must accrue to the district through increased production and consequent prosperity.

The site of the Woolshed Dam is on an alienated portion of 40 acres, which, it is believed, might be purchased for the sum of £3 per acre. The only other case for compensation, Mr. Mackworth states, would be that of a miner, who would require either pecuniary compensation for being deprived of his water supply, or else a continuance of the right to four ground-sludge heads of water.

This water supply would not benefit the workings in the Jembaicumbene Valley, where the auriferous deposits are almost entirely on private property. But there is a good supply of water in the Jembaicumbene Creek, which may, without much difficulty, be made available, should private enterprise require.

On the accompanying plan the position of the chief auriferous alluvial deposit is indicated by yellow colour. The sites of the proposed reservoirs are also marked. The levels of the principal points are given relatively to the Long Flat Gap, that point being taken as the datum. For the more convenient reference the levels *above* the Gap are marked in red figures, and those *below* it in blue figures.

I have, &c.,

C. S. WILKINSON,

Geological Surveyor in charge.

The Under-Secretary for Mines.

APPENDIX C.

Report by Mr. Lamont H. G. Young, F.G.S., Geological Surveyor.

Sir,

Department of Mines, February, 1880.

I have the honor to submit the following details concerning my work since I was re-appointed in October.

The first country I visited was that portion of the county of Clarendon lying between the township of Juneë and the Sebastopol Reefs. The geological formation at Juneë is granite, but towards the Sebastopol Reefs outlying patches of Silurian slates appear, until at the last-named place they replace the granite, and apparently pass in a connected body into the neighbouring county of Bland.

About Juneë, and for some distance to the north and north-west, the granite is only occasionally to be seen, in the more elevated rises, the country, as a rule, consisting of wide alluvial flats. There are numerous quartz reefs, sometimes of considerable size, both in the granite and the slate formations, and though they have evidently had their outcrops prospected, in each case the inducements to persevere, seem to have been confined to those reefs which are at Sebastopol in the slate formation, and at Juneë in granite.

The country is a fine open undulating forest land, with a good red soil, especially in those parts where the alluvial has been derived from the granite. At the time of my visit the Sebastopol Reefs were abandoned, except by one miner (George Nicholas), who was prospecting about the old shafts, and had lately found a promising "leader" showing gold. Besides showing me some specimens, he informed me that the Sebastopol Reef had had from ten to twelve shafts sunk on it, and the lowest point at which the reef was extracted for crushing was 120 feet. The prospectors' claim yielded about 15 dwts. to the ton, No. 1 North the same, and No. 2 North 13½ dwts.

The flats below the reef had been very little tried. The reef, including leaders, was about 11 feet wide. Further to the north were the Caledonian and Hibernian reefs. No alluvial had been found in connection with them. Prospectors had found nothing of note to the south of Sebastopol (in the granite country).

At one time there had been between 300 and 400 miners at the diggings, but the Palmer and other rushes had drawn them off before the reefs had been thoroughly tested.

After inspecting some land in this vicinity I received your instructions to proceed to the new rush at Cootamundra, my report on which was as follows :—

Sir,

Department of Mines, Sydney, 16 October, 1879.

Upon receipt of your instructions (per telegram) on the 10th instant, I proceeded to the site of the new rush near Cootamundra ; and I at once informed you (by telegram) of the state of matters as I found them.

The rush is situated three-quarters of a mile to the north of the Scrub Yards station, parish of Wallundry, county of Bland.

Two prospecting shafts, distant 50 chains from each other, have been sunk on a broad flat, which drains in a westerly direction, between hills of Silurian slate, containing quartz reefs. At the head of the flat, about 25 chains above the upper prospecting shaft, occurs a belt or dyke of diorite, containing a reef, known as the Sussex. In the slate formation on Specimen Hill, on the north side of the flat, several gold-bearing leaders have been found, and below these a reef known as the Blackwall. Again, about 1 mile to the south-west, another gold-bearing reef has been found, running west of north and east of south.

It will therefore be seen that this broad alluvial flat drains a belt of auriferous country at least 2 miles wide.

The fall of the lead, as indicated by the present surface of the ground, and the depth of the two shafts, is very small ; and, taking an average of the two sections shown in these shafts, the wash has a depth of 15 inches and a width of 35 feet.

The washdirt consists of a sandy clay, containing semi-rounded quartz pebbles, also considerable quantities of black sand (magnetite).

The sinking is quite dry and through a yellow sandy clay, having thin layers of quartz at irregular intervals. The bed-rock is a decomposed sandy slate.

As shown on the annexed sketch map, the sides of the lead are low rises of Silurian slates, having a strike more or less north and south. Near the top of the lead, as before-mentioned, there is a belt of diorite, which is much decomposed near the Sussex Reef, but where it crosses the lead appears as a compact and solid rock.

The Sussex Reef, which runs north and south, has remained unworked for the last seven years. It was sunk to a depth of 140 feet, and some few tons of stone were crushed. The returns averaged only 13 dwts. per ton.

The reef is composed of a ragged white quartz, and contains a great quantity of oxide of iron and brown hematite. At the present time the workings have all fallen in.

I should mention that the rises to the south-east of this reef are covered with the debris of a Silurian conglomerate, which occurs massive at about $\frac{1}{2}$ a mile to the south-east ; and the pebbles are chiefly of hard sandstone, with occasional quartz, and though I looked especially for granite and diorite amongst them, I failed to see any. This conglomerate resembles very much the silurian conglomerate to the west of Forbes, the only difference being the absence of pebbles of granite. This pebble debris occurs also near the Scrub Yards station, the pebbles there being occasionally 1 foot or more in length, and, as in the other locality, are very much rounded.

The leaders of Specimen Hill have been fossicked at different periods, some as far back as seven years. Between these two spots is the Blackwall Reef, on which some little work has been done. The chief characteristic of this reef is that the faces in the quartz are covered with a film of oxide of manganese. As before mentioned, the reefs are in slate formation.

The two shafts which were bottomed on the lead, at the time of my previous report, were sunk over eight months ago, by a miner named James Maloney ; and he informed me that he did not consider the prospects he then got (a grain to a grain and a-half to the dish) sufficiently encouraging to report to the Department of Mines.

I will here repeat the information I telegraphed concerning these two shafts, and add what has since been and is being done at the present time.

On the lower part of the lead, prospectors' shaft (Messrs. John Taylor and others), down 90 feet, bottomed on wash, 18 inches thick and 34 feet wide ; three and three-quarter loads gave 1 oz. 1 dwt. 12 grs. ; the prospectors are putting up a horse-whip and digging dam.

No. 1 N.W. bottomed on the edge of the washdirt the morning I left (44), at a depth of 84 feet; a prospect gave about one and a-half grain to the dish; the gutter lies to the north of the shaft.

No. 1 S.E. down 65 feet, expecting to bottom in a day or two.

No. 2 S.E. bottomed shallow at 40 feet on the 13th instant; no wash; intend sinking more to the south.

On the shallow part of the lead, prospectors' shaft (Messrs. Andrews and others), down 74 feet, bottomed on the wash 12 inches thick and 37 feet wide; three loads gave 15 dwts.; gold coarser than at the 90-foot shaft, and wash more clayey; putting up a horse-whip.

No. 1 N.W. down 40 feet; sinking No. 2 N.W., down 60 feet, expect to bottom in a day (14th).

No. S.E. down 37 feet; expect to bottom in a day or two; had sunk a shaft on each side of present one.

These are all the shafts that are down any considerable distance, though a great number of claims are pegged out and being shepherded.

The gold is of a fine quality, and contains small fragments of quartz. It does not appear much waterworn, and I expect has not travelled far. As previously mentioned it is coarser at the upper end of the lead, which would seem to indicate that it was derived from the reefs and diorite.

The washdirt will have to be treated in puddling-machines, and considering the scarcity of water on the spot, and the advanced period of the year, there is likely to be a want of water for washing purposes.

The nearest point of the Narraburra Creek is $5\frac{1}{2}$ miles distant, but as I have not inspected it I am unable to say if there is a constant supply.

In conclusion, I would beg to point out that the geological formations of this locality are favourable for the occurrence of auriferous alluvial deposit in the lead, which was the ancient drainage channel of the valley in which the rush is situated, but whether payable or not can only be ascertained by actual prospecting. This will be done during the next few days, for there are so many experienced diggers on the ground (not, I am told, without capital) that both it and the neighbouring country will receive a fair prospecting.

I have no doubt that in the other main valleys draining across this belt of auriferous country similar leads will be found. There is a point some 4 miles to the south-east of the Scrub Yards station called "Possum Power Flat," where a shallow lead has been slightly prospected, which is worthy of attention.

I have to express my thanks to Mr. Seaborn, the owner of Scrub Yards station, for the kind assistance he rendered me.

I have, &c.,

LAMONT YOUNG,

The Under Secretary, Mines Department, Sydney.

Government Geological Surveyor.

After returning to Sydney, I proceeded by sea to Bateman's Bay, in the county of St. Vincent, on my way to inspect the Moruya silver mine. My report and plans of this mine you have already received.

The following are my notes on the geology of the country I traversed:—

At Bateman's Bay the geological formations consist of slates and sandstones, apparently of Silurian age. These are exposed in the cuttings of the road from Bateman's Bay to Moruya, till within 4 miles of the last-named locality, when granite appears and continues uninterruptedly into Moruya. About halfway between the above two places is the township of Mogo, originally the centre of a diggings called the Mogo Gold-field. At the time of my visit however there was little or no mining being done in the locality, and the township was nearly deserted.

Both reefs and alluvial were worked near Mogo, the latter, I am informed, with considerable success. The chief reefs are situated a little over a mile to the north of the township. Those adjoining the road were known as Burn's and Combes's, and Corrigan's, while the reef on Cabbage-tree Creek was known as Picket's. Some other reefs were prospected near the junction of the Mogo Creek with the Clyde River, the claims being known as Annet's, and Degan's. After leaving Mogo and proceeding in the direction of Moruya, the road crosses two very large

deposits of quartz drift, separated from each other by the Mogo Creek, up which, 1 mile from the road, could be seen some diggers' holes. As far as I could ascertain, these deposits have been but little prospected, though one of the branches is locally known as the "Poor House," for when prospectors are hard up they can always wash out a few dwts. at this place. I think the locality well worthy the attention of miners. The creek, which passes through Mogo, is called Becca Creek on the east of the township. Attempts were made to work the alluvial in its vicinity, but the ground was found so highly charged with water that, after several parties had tried to get a shaft down, the locality was abandoned.

Between Bateman's Bay and Mogo the road is bounded by steep gullies and dense underwood, from which rise fine trees of the spotted-gum and stringy-bark. The broken character of this country has doubtless tended to check prospecting, together with the fact of so many gold-fields having been discovered in rapid succession, and the consequent withdrawal of mining populations from auriferous areas before they were thoroughly tested.

Having inspected the Moruya silver mine, and directed some picked samples of the ore to be collected, I took advantage of the opportunity to ride to the Gulf Diggings. As far as Begarlie granite is shown in the road cuttings, and at that place is intersected with basalt veins well seen in the cutting on the top of the hill above the schoolhouse. A little beyond Begarlie the road comes into a basalt, which rock continues for some 3 miles to the south. On the south of the bridge at Turlingah a slate formation appears. After leaving Eurobodalla and crossing the Tuross River, the road ascends a high range, on the top of which I noticed the remains of a conglomerate; the pebbles were of sandstone and hard slate, similar to those usually seen in Silurian conglomerates.

The Gulf Gold-field, as its name would imply, lies in a deep valley. The chief workings were adjoining the township, and situated in a private paddock. The amount of gold taken out of this portion was very considerable, but it has long since been worked out, and what digging is now being done, is at the head of the valley, and the miners are chiefly Chinese. No reefs seemed to have been worked near here, or indeed found, and I would recommend prospectors to look for some when prospecting for alluvial in the neighbourhood.

On returning to Moruya I secured my specimens from the silver mine and proceeded to Araluen. About 2 miles out of Moruya the road passes over a hill of sandy slates, otherwise the formation is granitic till a steep range 6 miles from Moruya is approached, when slates and sandstones are seen in the sides of the hills; these continue till within 3 miles of the township of Araluen, when granite again appears. During the last 12 miles of the road I noticed the slates were frequently intersected with dykes of diorite, and at one spot, eleven and a half miles from Araluen, there is a very large outcrop, in the undecomposed portion of which specks and nodules of iron pyrites may frequently be seen. That the whole of these slates are highly charged with iron is apparent from their uniform red colour. Along the banks of the Deua River and the Araluen Creek abandoned sluicing claims are to be seen, and I only observed mining operations being carried on at one place on the Deua River, where a party of Chinese were working. I was also shown a race which was in course of construction by another Chinese party lower down the river, near a point known as Specimen Hill.

From Araluen I visited the Elrington Gold-field, where I saw several reefs, which are very pyritous; in one of them, Snob's line of reef, some galena occurs. The granite of this locality is highly hornblendic, and would form a beautiful stone for ornamental purposes. Some I picked up near Mr. Hassell's reef was impregnated with iron pyrites.

After visiting the last-named locality I rode to Braidwood, which is situated in granite country. The following day I rode over the Mongarlowe or Little River Gold-field, in company with Mr. Galway, the Mining Registrar, and inspected some portions of land. On approaching this gold-field the granite disappears and is replaced by slate formation. There are evidences near the Mongarlowe township of extensive sluicing operations having been prosecuted; and the reefs in the vicinity were, I was informed, very promising; the great drawback has been, and is, the want of water for sluicing. Some very extensive races have been constructed, and are still in operation. It would be worth while to fix the positions and extent of the leads and reefs in this gold-field, and to ascertain if water could not be brought on to the former.

From Braidwood I also inspected some Church and School Lands on the right bank of the Shoalhaven River, where, just above the junction of the Gillamatong Creek, some miners are

employed in sluicing a very large deposit of alluvial, the amount of gold in which is comparatively small, but is compensated for by the quantity of material. The enterprising proprietors have had to construct a very long race, the fall in the river being so small, but there is enough wash-dirt to last them for years; and similar deposits I believe occur lower down the river.

I then returned to Sydney, and my next work was to report on the improvements necessary in connection with the Fish River and Wambian Caves.

My reports on these localities, together with designs for improvements, I had the honor of handing to you shortly before the close of the year.

According to your instructions, I secured specimens of rocks and minerals for the Museum from the various localities I visited. I also collected a set of small specimens for microscopical examination; and as I have recently received a microscope from England, I hope to be able to offer some diagrams of rock sections for the next annual report of the department.

I have, &c.,

LAMONT YOUNG,

Geological Surveyor.

The Geological Surveyor in charge.

APPENDIX D.

NOTES on the Geology of part of the New England District, by E. F. Pittman, L.S., Geological Surveyor.

FROM Bendemeer to Longfold station (Gibson's), and thence to Watson's Creek, the formation is granite, with the exception of a narrow belt of slate between Bendemeer and Longfold. At Bendemeer the granite is hornblendic, containing a little oblique mica (muscovite), while at Longfold it changes to tertiary granite with black mica (Biotite).

Some tin leases were inspected on Watson's Creek. The tin has not nearly been worked out on this creek in places. The workings were abandoned chiefly because the depth of sinking (14 feet) would not allow of the profitable extraction of the ore at the then price of tin. This creek takes its rise in the range, at a place called the Giant's Den, where the deposit was rich, and where work was last carried on. It is probable that portions of this creek may be profitably worked if tin remains at its present price.

The road from Bendemeer eastwards to Walcha is over granite (hornblendic) for 22 miles (varied by only one narrow belt of slate), as far as Mrs. Scott's station (Surveyor's Creek). The range here is capped with basalt for about a mile along the road, and then succeed altered slates and sandstones to Walcha. The town of Walcha is on an alluvial flat. The surrounding ranges are composed of altered slates and conglomerates very similar to those of the Barrington, only that the conglomerates show more distinct bedding. The road from Walcha to Oorundunby is over undulating basaltic country with swampy flats. At Fletcher's station occurs a belt or patch of foliated and contorted slate with numerous quartz veins interlaminated. To the south of this is a patch of breccia, consisting of quartz fragments in a ferruginous cement. The tops of the hills are covered for several feet with angular quartz gravel. At their junction with the basalt the contorted slates are altered to quartzite. The belt is about 2 miles wide. The strike is about 10° south of east.

A number of portions measured for auction sale were inspected on this run. The road from Oorundunby to Branga Park passes for a mile over the belt of foliated slate country alluded to before in the vicinity of Fletcher's home station, then over undulating basalt country as far as Branga Park (Wauch's station). The basalt shows columnar structure in occasional isolated hills. From here to Aberbaldie station the road is over hard blue altered slates containing quartz reefs. One reef about 2 feet wide has been opened by a shaft to a depth of about 20 feet, about 1 mile to the east of Alberbaldie, but gold was not found in payable quantity. The track follows along the south side of Bald Hill Creek. On the northern side of the hill is a high basalt-capped mount called Bald Hill. A number of portions were inspected on the Aberbaldie run. The altered slate extend for about a mile or so west of the M'Donald River, and then gives place to a narrow patch of basalt, which is in turn succeeded on the west by the belt of granite which was last crossed at Surveyor's Creek. The strike of these altered slates is about north and south.

The road from Aberbaldie to Inglebar is over the same altered slates, varied occasionally by an overlying patch of basalt. The same country is again met with from Inglebar to Branga Plains, where basalt occurs once more.

A number of portions measured for auction sale were inspected on the Branga Plains Station. South-east of the station, and across the creek, is a steep basalt hill, the summit of which is a table-land perfectly level for several miles. From Branga Plains north-westward to Glen Morrison Diggings the same belt of slate country noticed previously is traversed. The rocks at those diggings remind one very much of the Barrington in structure and appearance. Only two reefs are being worked at Glen Morrison, viz., the Bar and the Star, by three parties of men. There is a considerable number of parallel reefs within a short distance; their strike is north and south, and they underlie slightly to the west. One crushing of 50 tons from the Star Reef averaged 15 ozs. gold per ton, value £3 13s. 6d. per oz. The only battery on the field is on a creek $2\frac{1}{2}$ miles distant from the reef; so the cost of carting and crushing has been a heavy item. The reefs are variable in width from 3 inches to 3 feet.

The road from Walcha to Uralla is over altered slate country, with occasional quartz reefs. The granite about Uralla is in places capped with basalt, and under this is a ferruginous conglomerate formed of the old drift. This is everywhere more or less auriferous.

The road from Armidale to Glen Innes is over basalt for a few miles; then hard altered sandstones to the Devil's Pinch, where basalt again caps the range, and this old lava flow appears to continue to Glen Innes. The latter town is on a basaltic plain or valley. Between Glen Innes and Tenterfield granite is the prevailing rock, with occasional alternations of altered slates. A number of portions measured for auction sale were inspected in the granite country in the neighbourhood of Tenterfield.

From Tenterfield to Boorook the road is over granite, which at the silver mines gives place to hard altered slates. At the turn off at Sandy Hills blue slates appear, and reach for about 7 miles in the direction of Tenterfield; then blue, green, and purple metamorphosed conglomerates, probably of Devonian age. At Tea-tree Creek, about 9 miles from Tabulum, are seen the last of the upturned edges of these altered slates and conglomerates; and here, resting unconformably upon them, and dipping at a very low angle to the eastward, commence a series of pebble conglomerates and coarse sandstones evidently belonging to the coal-bearing formation. This continues all the way to Tabulum, only varied by a narrow belt of syenitic granite.

A number of portions measured for auction were inspected on the Tabulum Run. At the Home Station the dip is east at 5 degrees. A high range here consists of coarse sandstones and conglomerates, containing much fossil wood of considerable thickness and entirely converted into red hematite.

From Tabulum South along the Clarence River to Yugalbah Station, the first 27 miles is over the same sandstones and conglomerates; then a belt of dark green and mottled serpentine. About 4 miles south-east of Yugalbah Station occurs what is known as the Pucka antimony lode. A reserve was recommended around the outcrop of the lode, to prevent further alienation of probable mineral-bearing country. The course of this lode is east 60 degrees north. It occurs in partially decomposed granite, and has been worked to some extent, the difficulties attending carriage having been the cause of its being abandoned.

From Yugalbah the road to Lionsville is over granite country. The Lion Reef has been quite abandoned, the crushing machine being now on the road to Boorook, where it is to be erected.

From Lionsville southwards, over altered slates, with occasional patches of granite, to Ogilvie's out-station on the Mitchell River, about 20 miles, another antimony lode, from which some good ore has been obtained, and which, it is said, is about to be re-worked, occurs in the range about 10 miles south-west of Lionsville. From this out-station Cangai is reached in about 12 miles, in a southern direction, over altered slates and sandstones. This gold-field affords employment for a few Frenchmen, who fossick in the alluvial gullies about 4 miles north of Cangai. The slates here dip south-west at an angle of 80 degrees, and are very flexured and altered, containing numerous quartz leaders.

From Yugalbah, going east to Gordon Brook Station, the road lies over serpentine for about 3 miles, and then for 8 miles over coarse sandstones and conglomerates (Grafton Coal Series), then alternate belts of serpentine and pebble conglomerates to within 2 miles of Gordon Brook Station, where granite again makes its appearance.

After leaving Gordon Brook Station the track is over 2 miles of granite, and then again a belt $1\frac{1}{2}$ mile wide of hard altered slates dipping 70 degrees west of north at an angle of 70 degrees.

In this formation occurs a lode of copper ore, which has been pretty well prospected, and which, with better facilities for carriage, would probably pay to work. The belt of slates again gives place to the carboniferous conglomerates and sandstones, which now reach right away to the Clarence Heads, where their dip was observed to be westward at a low angle. About Grafton were found a number of plant impressions, the most distinct and common of which was *Tæniopteris Daintreei*, which would seem to point to the fact that these rocks are newer than our Coal Measures, and probably of Jurrassic age. Some samples of good coal, said to have been taken from some thick seams in the ranges between Tabulum and Grafton, were shown me.

I regret that the urgent nature of the work I was engaged upon prevented me from inspecting the locality.

APPENDIX E.

Report on the Wambian Caves, by Lamont H. G. Young, F.G.S., Geological Surveyor.

Sir,

Department of Mines, 31 December, 1879.

In accordance with your instructions I inspected the Wambian Caves, with a view to determining what improvements should be effected. My report on this point I have already submitted, and I now beg to add the following general remarks :—

The Wambian Caves are situated in the parishes of Bouverie and Quinecor, county of Westmorland. They may be approached either from Goulburn on the south, or Mittagong on the north. The road from Goulburn as far as Teralga is very good, the distance between the two places being 30 miles ; from Teralga three roads lead to the caves. The first and shortest is a bridle track, in places exceedingly rough, making the remaining distance 9 miles ; the second, the road *via* Richlands Station, distance 22 miles, which only needs a little clearing between Richlands and the caves to make it a very good road for vehicles ; and thirdly, a road between these two, distance 13 miles, but which, on account of its passing over very broken country, and crossing the heads of several creeks, is, I am told, but little used. In saying these roads lead to the caves, it would be more correct to say that they lead to a free selection some 2 miles from the caves, situated on the ranges overlooking the valley in which the caves are. It is at this point that all buggies, &c., have to be left, and the remainder of the journey done on foot, or on horses ; tents, provisions, &c., being packed on the same. The horse-track is very rough, and could at a small outlay (say £10) be made much better ; and a good road for vehicles could easily be laid out round this hill, known as the Queen's Gap, as mentioned in my previous report.

The limestone, in which are the caves, is a belt about 1 mile wide and $2\frac{1}{2}$ miles long. It is situated in the midst of altered sedimentary and igneous rocks, and doubtless for this reason has been altered into a highly crystalline marble, nearly all trace of fossils being obliterated (I found some in one place only, namely, just below the new cave). This marble is in places of the purest white, and would, I think, offer a very good stone for ornamental purposes, though it has a tendency to be rather large in the grain. The valley in which the limestone lies has, from the nature of its constituent rock, been considerably denuded (by atmospheric agencies) below the level of the surrounding country, and the usual proof, in the shape of water-worn pebbles lying on the highest ridges, indicates that water has at one time or other flowed over every part. The trees in the valley have nearly all been ring-barked some years ago, and an expanse of open ground is thus presented to the eye, which is further enhanced by the magnificent river oaks that mark the course of the present creek. These fine trees are the largest of their kind I have yet seen in the Colony, and lend, from their difference in form and colour to the eucalyptus forest on the surrounding hills, no small charm to the landscape. The streams that flow through the valley and the old cave respectively were both running at the time of my visit ; and from the heaps of driftwood lying at higher levels, they must in flood time be of considerable dimensions ; indeed, the guide informed me that one of the matters of interest in connection with the caves was to hear the water roaring through the lower recesses of the old cave on such occasions.

After descending the steep hill known as the Queen's Gap, and crossing the Forest Mare's Creek, the track to the old cave leads over a hill covered with a variety of wattle-scrub, which at this season of the year is covered with blossom. From the summit of this hill, which might be called Wattle Hill, for the sake of fixing localities, the track descends into the valley of the creek that runs through the old cave on its way to join the one previously mentioned, and which is the main creek. It is on the banks of this small creek that visitors pitch their camps, and the only improvement that could supplement the good grass and water that exists would be the erection of a small paddock to confine horses.

There are no stalactitic formations of special interest to be seen on first entering the old cave. The bed of the creek and the sides of the archway are composed of white marble, more or less smoothed and rounded by the attrition of the sediments contained in flood-waters. Large boulders of the altered and igneous rocks of the neighbourhood are scattered along the creek bed, and in places cemented drift on the sides indicates the mouth of some side passage, now filled up with pebbles and stalactitic matter. Up to the present the entrance to the old cave from the camping ground has been, after much rainfall, blocked by a large pool of water; this has been a serious inconvenience, as it necessitated a journey over Wattle Hill, or a wade through the cold waters of "The Waterhole." I have recommended in my previous report that this natural reservoir be tapped by boring a hole in the marble from a lower level; the length would only be 8 feet at the most, and the use of gunpowder, which might be objectionable, would thus be avoided. A small hole would do, as the running water would soon enlarge it. On going up a short ascent from the Waterhole, the visitor is confronted by the remains of some large stalactites, which must have at one time been very fine; the smashing and name-writing, however, which have taken place amongst them have quite destroyed their appearance. The track then passes through the "Drawing Room" and "Ceiling Room," the latter having some pretty formations on its roof, and so into the "Ball Room," the place, as the guide informed me, most patronized. The floor of this chamber is of recent formation, and hence emits a hollow sound when stamped on, while the ramifications that lead from it supply a very fair echo. Just before entering the ball room a somewhat difficult ascent leads to a magnificent group of stalactites, for which, as they had no special name, I suggested the name of the Trophy, to the guide; they are the largest stalactites I have seen, are perfectly preserved, and of various forms. I may here mention that the formations in these caves are, as a rule, of a snowy whiteness, and generally opaque, as compared with those of the Fish River Caves. From the ball room the visitor passes into the bats' cavern, a large chamber containing many beautiful stalactitic formations, and the resort of numbers of bats. From this spot to the exit, on the main creek side of Wattle Hill, nothing of extraordinary interest presents itself. There are many ramifications in the old cave that have never been explored, which may contain places of great beauty and interest; and it is as well they should remain unentered until it is understood that their attractions are for the benefit of the public, and as such to be respected by individuals. There are great numbers of wallabies about this cave, and their occasional appearance and display of activity, serves to break the monotony of observing the beautiful but immovable outlines that fill the interior of the cave. As at the Fish River Caves, the wallaby paths are clearly indicated by the limestone being highly polished. On the surrounding hills wombats, I am informed, are equally numerous; and an examination of the drift deposits in the caves might reveal an equally abundant state of life in ancient times, when the giant types of these animals existed.

The new cave is on the right bank of the Forest Mare's Creek, about a quarter of an hour's walk from the camping ground. There is a very steep piece of bank to be climbed from the creek up to the cave mouth, and I have recommended a wire-rope hand-rail to be put up. The cave-mouth has at present a wooden gate on it, but it is unsightly and does not act well. I have submitted a design for an iron gateway that will satisfy both conditions. At the time of my visit the "show" part of this cave was flooded, and I was therefore unable to inspect the beauties of "the Basins, &c., &c." The few places I did see were very fine, and thanks to the guide, Charles Chalker, well preserved. This cave has, like the old cave, many unexplored recesses.

That other caves, as yet undiscovered, exist in this valley is beyond doubt, as in one place water may be seen entering one side of a hill and issuing on the other, the distance between the two places being over half a mile, while "potholes" are numerous in the limestone ridges.

In conclusion, I beg to point out that these caves offer exceptional opportunities for enjoyment to tourists, the attractions of the caves themselves being supplemented by the facts of there being good grass and water, suitable sites for camping, settlers in the immediate neighbourhood, shooting for the sportsman, and objects of interest for the followers of art and science. They are therefore well deserving of the protection of the Government and the patronage of the public.

I have, &c.,

LAMONT YOUNG, F.G.S., &c.,

The Under Secretary for Mines.

Geological Surveyor.

APPENDIX F.

AN account of strata passed through in No. 8 Borehole, on the A. A. Company's Newcastle property, situate in the N.E. corner of said property, near their Newcastle office ; bored by W. Steel ; completed January, 1880.

	Thickness of strata. feet inches.		Thickness of strata. feet inches.
Surface sand	20 0	Slate band	0 1
Clay and pebbles	33 0	Coal	0 2
Soft post	7 0	Pipeclay	0 11 $\frac{1}{2}$
Blue slate	2 0	Coal	0 4 $\frac{1}{2}$
Hard black slate	1 0 $\frac{1}{2}$	Slate band	0 0 $\frac{1}{2}$
Blue slate	0 11 $\frac{1}{2}$	Coal	0 4 $\frac{1}{2}$
Coarse coal	0 6	Do.	0 9 $\frac{1}{2}$
Coal	0 6 $\frac{1}{2}$	Do.	0 9
Do.	0 8 $\frac{1}{2}$	Do.	0 7 $\frac{1}{2}$
Stone band	0 3 $\frac{1}{2}$	Do.	0 7 $\frac{1}{2}$
Coal	0 6	Do.	0 8 $\frac{1}{2}$
Do.	0 8	Do.	0 8 $\frac{1}{2}$
Do.	0 6	Black slate band	0 0 $\frac{1}{2}$
Fireclay	0 7	Coal	0 7 $\frac{1}{2}$
Gray post	23 8	Do.	0 7 $\frac{1}{2}$
Post and slate girdles	13 4	Do.	0 8
Slate, with fossil leaves	1 6 $\frac{1}{2}$	Do.	0 7
Coal	1 6 $\frac{1}{2}$	Do.	0 7
Brown slate, with fossil leaves	3 10	Do.	0 4
Gray post	0 0 $\frac{1}{2}$	Coal, rather coarse	0 3
Post and slate girdles	1 8 $\frac{1}{2}$	Coarse coal	3 1
Fireclay	0 10 $\frac{1}{2}$	Pipeclay	0 3
Gray post	7 0 $\frac{1}{2}$	Black slate	1 3 $\frac{1}{2}$
Do. and slate girdles	40 7	Coal	0 8 $\frac{1}{2}$
Gray post	13 21	Do.	0 7
Do. and slate girdles	5 8 $\frac{1}{2}$	Do.	0 6
Gray post	1 10 $\frac{1}{2}$	Do.	0 6 $\frac{1}{2}$
Do. and slate girdles	2 8	Soft parting	0 0
Gray post	3 10 $\frac{1}{2}$	Coal	0 8
Do. and slate girdles	2 9 $\frac{1}{2}$	Do.	0 8
Gray post	10 3	Do.	0 8
Do. and slate girdles	4 0	Do.	0 8 $\frac{1}{2}$
Do. with ironstone girdles	37 8 $\frac{1}{2}$	Do.	0 7 $\frac{1}{2}$
Do. and slate girdles	2 1 $\frac{1}{2}$	Do.	0 7 $\frac{1}{2}$
Brown coaly slate	2 3 $\frac{1}{2}$	Do.	0 8 $\frac{1}{2}$
Coal	0 8 $\frac{1}{2}$	Hard gray post	0 4
Do.	0 6 $\frac{1}{2}$		
Do.	0 3		
			275 31 $\frac{1}{2}$

APPENDIX G.

LIST OF DONATIONS to the Museum of Mines during the year 1879.

Contributor.	Contributions	Where from.
Mr. A. C. Thompson	Auriferous quartz (4 samples).....	Back Creek, Barrington.
Mr. Denecker	Do.	Do. do.
Mr. Martin Thomas.....	Do.	Do. do.
Mr. W. Elliot	Rock salt (2 samples)	Southern District.
Mr. Andrew Goldie.....	Aboriginal tomahawk of green slate.....	New Guinea.
Do.	Do. hatchet do.	Do.
Do.	Do. do. do.	Do.
Do.	Do. do. do. with handle	Do.
Do.	Do. hatchet handles	Do.
Mr. Perkins.....	Mispickel.....	Near Marulan.
Do.	Concretionary nodule of iron pyrites	Bungonia.
Mr. Bartlett	Selenite.....	Rome, Italy.
Do.	Fluorite.....	Piedmont, do.
Do.	Garnet in chlorite	Do. do.
Do.	Iron pyrites.....	Do. do.
Do.	Oligiste (specular iron)	Do. do.
Mr. H. Copeland, M.P.	Wood opal	Between Richmond and Tweed Rivers.
Mr. P. F. Adams	Encrinite	Near Tarana.
Mr. Campbell	Spirifer.....	Near Cudgong.
Do.	Fenestella.....	Do.
Do.	Favosites	Do.
Mr. T. Browne.....	Fossil bones (Diprotodon).....	Canadian Gully, Gulgong.
Do.	Fossil wood	Red Lead, Home Rule.
Mr. Theo. Ranft	Stream tin (2 samples)	Jinjellic, near Ournie.
Do.	Favosites	Silverdale, near Bowning.
Do.	Pyromorphite	Do.
Do.	Do. and galena	Do.
Do.	Euomphalus Clarkei	Do.
Do.	Coral.....	Do.
Do.	Trilobite	Do.
Do.	Sulphide and carbonate of lead	Do.
Do.	Fluor-spar	Do.
Do.	Favosites	Do.
Do.	Pseudomorph	Do.
Do.	Quartz	Do.
Do.	Oxide of manganese and iron	Do.
Do.	Stalactitic concretions	Do.
Do.	Quartz with carbonate of copper.....	Do.
Do.	Spirifer.....	Do.
Do.	Blende	Do.
Do.	Galena	Do.
Do.	Calcite and porphyry.....	Do.
Do.	Quartz do.....	Do.
Do.	Felspar do.....	Do.
Do.	Porphyry (various)	Do.
Mr. M'Glue	Gypsum	Bungonia.
Mr. Bartlett	Calcite on magnesite	Piedmont, Europe.
Do.	Lepidodendron	Scotland.
Do.	Copper ore	Cloncurry, Queensland.
Major Wells	Petrified wood	Bowling Alley Point, Peel River.
Mr. Zasson.....	Auriferous quartz	Bungonia.
Mr. Warden Martin.....	Galena	Glen Innes.
Major Wells	Ironstone	Bowral Bridge.
Do.	Clay from below bed of.....	Parramatta River.
Mr. Plania.....	Hornstone	Myall District, Port Stephens.
Do.	Stratified quartz.....	Do. do.
Mr. J. Coghlan	Diamond drill core.....	Gympie, Queensland.
Rev. Dr. Woolls	Petrified wood.....	Hawkesbury District.
Do.	Aboriginal tomahawks	Hawkesbury District
Mr. Wm. Drummond	Silver ore.....	Boorook.

APPENDIX G—continued.

Contributor.	Contributions.	Where from.
Mr. G. H. Gower, Mining Registrar.	Collection of tin ore and associated rocks.....	Gulf Lode Tin Mines.
Do.	Collection of tin ores, &c.....	Vegetable Creek.
Mr. J. B. Elworthy	Samples of asbestos	Gundagai.
Do.	Oxide of manganese	Gundagai.
Mr. J. Campbell	Iron sand	New Zealand.
Mr. J. Carter	Quartz crystal.....	Sewell's Creek near Rockley.
Mr. E. Peters	Crystalline red oxide of copper	Thompson's Creek Mine.
Mr. R. Wiseman	Stone hatchets	Gloucester District.
Mr. Brady	Micaceous iron and oxide of manganese	Boro.
Mr. Neilly	Samples of quartz	Near Bega.
Mrs. Carter	Nodules of quartz in silurian shales	Billabong Run, Marsden.
Mr. Warden Sharp	Arsenical pyrites with visible gold	Back Creek, Barrington.
Do.	Encrinite in sandstone	Do. do.
Do.	Spirifer and productus	Do. do.
Mr. W. Drummond	Crinoid stem	Near Tenterfield.
Do.	Productus	Do.
Mr. A. H. M'Culloch, M.P.	Gleichenites odontopteroides	Mount Piddington.
Mr. Connelly	Copper in porphyry rock	Parkes.
Do.	Porphyry	Do.
Do.	Silicate of copper	Do.
Do.	Carbonate of copper	Do.
Mr. Orchard	Sapphires	Snowy River.
Mr. W. O'Brien	Micaceous iron	Boro.
Mr. T. Herbert	Shale stained with iron	Cobar.
Mr. Ousby	Opal	Near Carcoar.
Mr. W. H. J. Slee	Collection of quartz specimens	Adelong.
Mr. Joseph Paxton	Collection copper ores	Peelwood Copper Mines.
Mr. Fountain	Hematite	Brisbane Water.
Mr. Lewis	Pleurotomaria	Wollongong.
Do.	Spirifer	Do.
Do.	Pachydomus	Do.
Mr. Orchard	Pyritous quartz	Major's Creek.
Mr. H. Brown	Sandstone and calcite	Patterson River.
Mr. W. Buchanan	Spirifer	Lucknow.
Mr. F. C. Suttor, junior.	Silver ore	Mount Grosvenor, Peel.
Mr. Fitzgerald	Gleichenites	Mount Victoria.
Mr. S. Dewhurst, L.S.	Selenite and agates	Lake Cobham.
Mr. Hobbs	Magnetic iron	Mount Dromedary.
Mr. P. Newgent	Tourmaline	Tarcutta.
Do.	Gold quartz	Do.
Mr. Mayne	Stalactitic iron ore	Goulburn.
Mr. Blackett	Copper ores	50 miles north of Condo-bolin.
Mr. J. K. Hume	Orthis	Yass District.
Do.	Iron ore	Do.
Do.	Manganese	Do.
Mr. T. Carney	Iron pyrites	Boro.
Mr. W. L. Leitchfield	Diamonds	Cope's.
Do.	Sapphires and corundum	Do.
Dr. Brereton	Iron pyrites and encrinite stems	Shoalhaven District.
Mr. Warden Browne	Fossil fauna	Gulgong.
Mr. G. A. Brooks	Fossil bones (diprotodon)	Scrubby Range Station Lachlan District.
Mr. North, L.S.	Spirifer, strophomena, and productus	Head of Carrowbrook, County of Durham.
Dr. Creed	Nodular pebble, ferruginous sandstone	Upper Hunter District.
Mr. Johnson, M.P.	Galena	Mylora, Yass.
Mr. Roper	Tooth of diprotodon	Near Merriwa.
Mr. Chas. Weaver	Chrome iron	Tamworth District.
Mr. Jas. Wilson	Brachiopoda	Broughton Creek, Southern District.
Do.	Favosites and euomphalus	Broughton Creek, Southern District.

JUN 20 1934

NOTES TO ACCOMPANY GEOLOGICAL MAP OF HILL END AND TAMBAROORA.

THE occurrence of the Gold-bearing veins in the Hill End District is of particular interest, both on account of the extraordinary richness which characterized some of them, and from the fact that they present certain peculiarities not met with in the other gold-fields of New South Wales.

The Geological formation of Hill End and Tambaroora consists of Upper Silurian slates, sandstones, and conglomerates, which have been much transmuted and disturbed, so that they are now inclined at angles varying between 60° and 70° from their original horizontal position. The auriferous portion of the field consists of a long narrow strip of country running north and south, the part of which shown on the map extends from the Turon River to the range (north of Tambaroora) forming the watershed between the Dirtholes Creek and the Tambaroora alluvial deposits. An anticlinal axis extends along the centre of this strip of country, and from each side of this axis of elevation the strata dip away to the east and west at high angles.

The town of Hill End is built on an elevated tableland (nearly 1,500 feet above the bed of the Turon River), the surface of which was highly auriferous, and from it break away on all sides steep, rugged gullies, which feed the Tambaroora Creek and the Turon River. Some of these gullies, in the early days of the gold-field, contained rich alluvial deposits of gold derived from the auriferous reefs of the tableland.

As might be expected from the highly altered condition of the sedimentary rocks in this locality, the palæontological evidence of their age is somewhat scanty. The siliceous slates and sandstones appear to be quite unfossiliferous, but obscure impressions of spirifera, encrinites, and corals (*Favosites*) are rather plentiful in the metamorphosed conglomerates.

This latter rock forms one of the most noticeable features of the district. In the physical peculiarities of its occurrence it somewhat resembles the Diorites which are characteristic of the neighbouring gold-

fields of the Upper Turon (Sofala), standing out on the hill-tops in huge rounded masses, and showing a somewhat bomb-like or concretionary structure when quarried. Here, however, the similarity ends, for the Hill End rock, on close inspection, is found to be free from hornblende, and consists of quartz and felspar crystals in a blue silico-felspathic matrix, while indistinct outlines of large pebbles of slate and sandstone clearly point to the fact that it is an altered sedimentary rock, the re-arrangement of the particles with the production of the crystals of felspar and quartz being due partly to chemical action, and partly to heat and pressure caused by the shrinkage of the earth's crust. Judging from the position of the chief auriferous veins with regard to this rock, it would appear that the gold now impregnating them has been derived from these beds of conglomerate; and if so, portions of the latter must have originally been less auriferous than others, since we find that, further east and west, similar beds are traversed by quartz veins which will not pay to work.

It is a noticeable fact that there are no Diorites on this field, though, as above stated, they are common in the Sofala District.

The highest point about Hill End is the top of Bald Hill, which is capped with two flows of Basalt of Pliocene age. The lower of these is very decomposed, and contains zeolite crystals (Chabasite); the upper is a dense blue Basalt, with crystals of Olivine and Corundum. It is probably an outlier which once formed the edge of a continuous lava flow, other portions of which (overlying drift) are to be seen near Monkey Hill on the one side, and a few miles down the Macquarie River on the other.

Hawkins Hill, which has become famous on account of the enormous yield of gold obtained from its veins, is composed of beds of the altered conglomerate above referred to, dipping to the eastward. Thin layers of dark slate, with some Chlorite slate, occur at intervals in the conglomerate, and carry lenticular veins of quartz with Pyrites and Potash Mica (Muscovite). In some places the mica was found to entirely replace the quartz, and here the gold was found to be excessively rich. The veins are about twelve in number and nearly parallel; their course is nearly north and south, with a dip to the eastward, and they occupy a width of from 80 to 120 feet in the aggregate.

The Star of Peace Company are still prospecting with praiseworthy perseverance. At the 770-foot level veins carrying rich gold were met with, and they are now down to a depth of about 800 feet.

The accompanying excellent plans and sections, prepared by Mr. T. S. Parrott, C.E., &c., from his underground surveys of Hawkins Hill, show in detail the positions of the various rich veins and the extent of the workings on them.

The locality marked ⑤ on the map appears to me to be of considerable interest, and worthy of the attention of prospectors. It will be seen that at this point, alluvial gullies, all of which were at one time rich in gold, trend in all directions from a hill in which numerous quartz reefs occur, and in which but little prospecting has been done. The fact that the alluvium, in nearly all the gullies draining the anticline from the Turon River to the Red Hill, near Tambaroora, has yielded payable gold, is evidence of the denudation of gold-bearing reefs along this line of country; and as the character of the reefs in Hawkins Hill shows that they are not regular and continuous, but recur in almost isolated lenticular patches, we may confidently predict that there are numerous rich veins, existing along this line of country, which will eventually be discovered, and the development of which will increase the importance, and ensure the permanence, of the Tambaroora and Hill End Gold-field as a quartz-mining district.

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Geological Surveyor.

Department of Mines,
Sydney, 1880.

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